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MINNESOTA
MOTOR VEHICLE
CRASH FACTS
1988

An analysis of crashes occurring on Minnesota roadways based upon accident reports submitted by investigating police officers and drivers to the Minnesota Department of Public Safety

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TABLE OF CONTENTS

DEFINITIONS v

INTRODUCTION AND SUMMARY 1

Table 1.01: Crash, Fatality and Injury Rates, 1979 - 1988 3
Table 1.02: Traffic Crash Trends, 1983 - 1988 4

PART I GENERAL INFORMATION 5

WHO was involved
Figure 1.01: Vehicles, Drivers, and Fatality Rates, 1979 - 1988 5
Table 1.03: 1988 Fatalities by Traffic Role and Age 8
Table 1.04: 1988 Fatalities by Traffic Role and Sex 8
Figure 1.02: Age Group and Sex of Persons Killed and Injured in 1988 9
Table 1.05: Age and Sex of Persons Killed or Injured in 1988 Crashes 9
Table 1.06: People Killed and Injured in Various Vehicle Types, 1988 10
Table 1.07: Driver License Summary by Age, 1979 - 1988 11
Table 1.08: Percent of Drivers in an Age Group by Accident Type, 1988 12
Table 1.09: Drivers in 1988 Crashes by Physical Condition 12
Table 1.10: Age and Sex of Drivers in 1988 Crashes 13
Table 1.11: Licensed vs. Crash-involved Drivers by Age, 1988 14
Figure 1.03: Licensed vs. Crash-Involved Drivers by Age Group, 1988 14
Table 1.12A: Factors Contributing to Multiple-Vehicle Crashes, by Percent, within Driver Age Groups, 1988 15
Table 1.12B: Factors Contributing to Single-Vehicle Crashes, by Percent, within Driver Age Groups, 1988 16

WHAT the conditions were
Table 1.13: 1988 Crashes and Injuries by Accident Type 17
Table 1.14: 1988 "Hit-and-Run" Crashes and Injuries by Accident Type 17
Table 1.15: 1988 Crashes by Light Condition 18
Table 1.16: 1988 Crashes by Weather Condition 18
Table 1.17: Apparent Contributing Factors in 1988 Crashes 19
Table 1.18: 1988 Crashes by Road Surface Condition 20
Table 1.19: 1988 Crashes by Road Design 20
Table 1.20: Types of Vehicles in 1988 Crashes 21
Table 1.21: Motor Vehicle Registrations, 1984 - 1988 22

WHERE they happened
Table 1.22: 1988 Crashes by Type of Roadway 23
Figure 1.04: Crashes by Location 23
Table 1.23: 1988 Crashes by Traffic Control Device 24
Table 1.24: 1988 Crashes by Population of Area Where Crash Occurred 24
Table 1.25: 1988 County Crash Report 25
Figure 1.05: 1988 County Crash Map 28
Table 1.26: 1988 Crashes by City 29

WHEN they happened
Table 1.27: 1988 Crashes, Injuries and Fatalities by Month 32
Figure 1.06: 1988 Fatal Crashes vs. Total Crashes by Time of Day 32
Table 1.28: 1988 Crashes by Time of Day and Day of Week 33
Table 1.29: Holiday Crash Summary, 1984 - 1988 34

PART II ALCOHOL-RELATED CRASHES 35

Table 2.01:	Drinking Driver Summary, 1979 - 1988	36
Table 2.02:	DWI Arrests by Age, 1984 - 1988	37
Table 2.03:	DWI Arrests by Sex, 1984 - 1988	37
Table 2.04:	Age of Persons Killed and Injured in 1988 Alcohol-Related Crashes	38
Table 2.05:	Percent of Deaths, Injuries, and Property Damage Crashes Coded as Alcohol-Related, 1985 - 1988	38
Figure 2.01:	Alcohol Related Crashes by Time of Day, 1988	39
Figure 2.02:	Alcohol Related Crashes by Day of Week, 1988	39
Table 2.06:	Alcohol-Related Fatal Crashes by First Harmful Event. 1988	40
Table 2.07:	1988 Fatalities' Level of Intoxication by Traffic Role	40
Figure 2.03:	Alcohol Related Driver Fatalities, 1979 - 1988	41
Table 2.08:	Drivers Killed Who Had Been Drinking, 1979 - 1988	41
Table 2.09:	Drivers Killed Who Tested .01 or Higher, 1979 - 1988	42
Table 2.10:	Drivers Killed Who Tested .10 or Higher, 1979 - 1988	42
Table 2.11:	1988 Driver Fatalities' Level of Alcohol Concentration by Age	43
Figure 2.04:	Percent of Drivers Killed in an Age Group, Who Had Been Drinking, 1988	43
Table 2.12:	1988 Driver Fatalities' Level of Alcohol Concentration by Month	44
Table 2.13:	1988 Driver Fatalities' Level of Alcohol Concentration by Road Type	44
Table 2.14:	1988 Driver Fatalities' Level of Alcohol Concentration by Time of Day	45
Table 2.15:	1988 Driver Fatalities' Level of Alcohol Concentration by Day of Week	45

PART III RESTRAINT USE BY VEHICLE OCCUPANTS IN 1988 CRASHES 46

Table 3.01:	1988 Motor Vehicle Occupants Killed or Injured, by Age and Severity of Injury	47
Figure 3.01:	1988 Restraint Use of Motor Vehicle Occupants Killed or Injured, by Age Group	47
Table 3.02:	Restraint Use of Vehicle Occupants Killed and Injured in 1988 by Age and Injury Severity	48
Table 3.03:	Percent Restraint Use of Motor Vehicle Occupants Injured or Killed, by Injury Severity and Year, 1984 - 1988	49
Table 3.04:	1988 Motor Vehicle Occupants Injured or Killed, by Roadway Type and Restraint Use	49
Table 3.05:	1988 Motor Vehicle Occupants Killed or Injured, by Region and Restraint Use	50
Table 3.06:	Percent of Front Seat Occupants Wearing Seat Belts, by Date of Observation Survey	51

PART IV MOTORCYCLE CRASHES 52

Table 4.01:	Motorcycle Crash Summary, 1979 - 1988	53
Table 4.02:	1988 Motorcycle Crashes by Accident Type	54
Table 4.03:	1988 Motorcycle Crashes by City Population	54
Table 4.04:	1988 Motorcycle Crashes by Month	55
Figure 4.01:	1988 Fatal Motorcycle Crashes vs. Total Motorcycle Total Motorcycle Crashes by Time of Day	55
Table 4.05:	1988 Motorcycle Crashes by Time and Day	56
Table 4.06:	Motorcyclists Killed and Injured by Age and Sex, 1988	57
Figure 4.02:	1988 Motorcyclist Injuries and Fatalities by Age and Sex	57
Table 4.07:	Helmet Use by Motorcyclists Killed and Injured, 1984 - 1988	58

Table 4.08:	Endorsement Status of Motorcycle Operators Involved in Fatal Crashes, 1979 - 1988	58
Table 4.09:	Alcohol Use by Motorcycle Drivers, 1980 - 1988	59
Table 4.10:	1988 Motorcycle Driver Fatalities' Level of Alcohol Concentration by Age	59
Table 4.11:	Contributing Factors in 1988 Motorcycle Crashes	60

PART V: TRUCK CRASHES 61

Table 5.01:	Truck Crashes, 1985 - 1988	62
Table 5.02:	Persons Injured or Killed in 1988 Truck Crashes by Vehicle Occupied	62
Table 5.03:	Contributing Factors in 1988 Truck Crashes	63
Table 5.04:	Trucks in 1988 Crashes by Driver Age	64
Table 5.05:	Drivers in 1988 Truck Crashes by Physical Condition	64
Table 5.06:	1988 Truck Crashes by Accident Type	65
Table 5.07:	1988 Truck Crashes by Road Condition	65
Table 5.08:	1988 Truck Crashes by Time of Day	66
Figure 5.01:	Total 1988 Truck Crashes vs. All Motor Vehicle Crashes by Time of Day	66
Table 5.09:	1988 Truck Crashes by Month	67
Table 5.10:	1988 Truck Crashes by Weather Condition	67
Table 5.11:	1988 Truck Crashes by Population Area	68
Table 5.12:	1988 Truck Crashes by Type of Roadway	68

PART VI PEDESTRIAN CRASHES 69

Table 6.01:	Pedestrian Crashes, Injuries, Fatalities, 1979 - 1988	70
Figure 6.01:	Pedestrian Fatalities by Age Group, 1979 - 1988 Combined	70
Table 6.02:	Pedestrians Killed and Injured by Age and Sex, 1988	71
Figure 6.02:	1988 Pedestrian Injuries and Fatalities by Age and Sex	71
Table 6.03:	1988 Pedestrian Crashes by Month	72
Figure 6.03:	1988 Pedestrian Crashes by Time of Day	72
Table 6.04:	1988 Pedestrian Crashes by Time and Day	73
Table 6.05:	1988 Pedestrian Crashes by Population Area	74
Table 6.06:	Vehicle Movement in 1988 Pedestrian Crashes	74
Table 6.07:	Prior Action of Pedestrians Killed and Injured in 1988	75
Table 6.08:	Contributing Factors in 1988 Pedestrian Crashes	76
Table 6.09:	Drinking Pedestrian Fatality Summary, 1979 - 1988	77
Figure 6.04:	Drinking Pedestrian Fatalities, 1979 - 1988	77
Table 6.10:	1988 Pedestrian Fatalities' Level of Alcohol Concentration by Age	78
Table 6.11:	1988 Pedestrian Fatalities' Level of Alcohol Concentration by Time of Day	78

PART VII BICYCLE CRASHES 79

Table 7.01:	Bicycle Crashes, Injuries, Fatalities, 1979 - 1988	80
Table 7.02:	1988 Bicycle Crashes by Month	80
Table 7.03:	1988 Bicycle Crashes by Time and Day	81
Figure 7.01:	1988 Bicycle Crashes by Time of Day	81

Table 7.04:	Age and Sex of Bicyclists by Injury Severity in 1988 Crashes	82
Figure 7.02:	1988 Bicyclist Injuries and Fatalities by Age and Sex	82
Table 7.05:	Contributing Factors in 1988 Bicycle Crashes	83
Table 7.06:	Prior Action of Bicycle Drivers Involved in 1988 Crashes	84
Table 7.07:	1988 Bicycle Crashes by Population of Area	84

PART VIII SCHOOL BUS CRASHES 85

Table 8.01:	School Bus Crashes, 1979 - 1988	86
Table 8.02:	Age and Sex of Persons Killed and Injured in 1988 School Bus Crashes	86
Table 8.03:	Persons Injured or Killed in 1988 School Bus Crashes by Population Area	87
Table 8.04:	1988 School Bus Crashes by Accident Type	87
Table 8.05:	1988 School Bus Crashes by Time of Day	88
Table 8.06:	1988 School Bus Crashes and Injuries by Month	88
Table 8.07:	Contributing Factors in 1988 School Bus Crashes	89
Table 8.08:	1988 School Bus Crashes and Injuries by Traffic Control Device	90

PART IX MOTOR VEHICLE/TRAIN CRASHES 91

Table 9.01:	Motor Vehicle/Train Crashes, 1983 - 1988	92
Table 9.02:	Age of Persons Killed and Injured in 1988 Motor Vehicle/Train Crashes	92
Table 9.03:	1988 Motor Vehicle/Train Crashes by Month	93
Table 9.04:	1988 Motor Vehicle/Train Crashes by Time and Day	93
Table 9.05:	Contributing Factors in 1988 Motor Vehicle/Train Crashes	94
Table 9.06:	1988 Motor Vehicle/Train Crashes by Traffic Control Device Present	94

DEFINITIONS

Motor Vehicle Accident/Crash - An accident that involves a motor vehicle in transport on a public traffic-way in Minnesota and results in injury, death, or at least $500.00 in property damage.

Fatal Accident/Crash - A motor vehicle crash on a public traffic-way in which at least one person dies unintentionally as a result of the crash. The death must occur within 30 days of the accident.

Severe or Incapacitating Injury - An injury (other than a fatal injury) that prevents the injured person from walking, driving or normally continuing the activities he or she was capable of performing before the injury occurred. Includes severe lacerations, broken or distorted limbs, skull fracture, crushed chest, internal injuries, unconsciousness, etc. Hospitalization is usually required.

Moderate or Non-Incapacitating injury - An injury (other than a fatal or severe injury) that is evident to the officer at the scene of the accident. Includes abrasions, minor lacerations, bleeding, etc. May require medical treatment, but hospitalization is usually not required.

Minor or Possible Injury - An injury (other than a fatal, severe, or moderate injury) that is reported by a person involved in the accident. Includes complaint of physical pain when no cause is evident, momentary unconsciousness, limping, nausea, hysteria, etc.

INTRODUCTION AND SUMMARY

Minnesota Motor Vehicle Crash Facts is produced by the Office of Traffic Safety, Minnesota Department of Public Safety, in accordance with Minnesota Statutes, Section 169.10. The information presented is derived from accident reports submitted by citizens and law enforcement agencies for motor vehicle crashes involving death, personal injury, or property damage of $500 or more. The minimum dollar amount for accidents involving only property damage has changed over the years. The first minimum was set at $50 in 1939. This remained in effect until 1965 when $100 became the minimum. In 1976, it was raised to $300, and the present minimum ($500) became effective in 1981.

In 1988, 615 persons died and 44,415 suffered non-fatal injuries in the 102,094 motor vehicle crashes that occurred on public roadways throughout the state. Nearly 3.4 million vehicles travelled 36.4 billion miles on our state's roadways. Minnesota drivers licenses were held by 3,127,029 people in 1988. The total economic loss resulting from motor vehicle accidents in Minnesota was $579,943,600. This figure is calculated from costs estimated for 1987 by the National Safety Council for fatalities, injuries, and property loss resulting from traffic crashes.

The total dollar value is determined as follows:

615	Deaths	@$270,000	= $166,050,000
5,501	Severe Injuries	@$28,600	= $157,328,600
15,593	Moderate Injuries	@ $7,100	= $110,710,300
23,321	Possible Injuries	@ $1,700	= $39,645,700
70,806	Property Damage Crashes	@ $1,500	= $106,209,000
		Total	= $579,943,600

These estimates are based on the calculable costs of wage loss, medical expenses, insurance costs, and property damage.

The purpose of *Minnesota Motor Vehicle Crash Facts* is to provide summary information about the traffic crashes which occur in Minnesota. The report is divided into nine parts. The first examines general information about crashes, vehicles, and drivers; the other sections review pedestrians, motorcycles, and other selected types of motor vehicle crashes. Due to changes in the way accident information is collected and analyzed, some of the results presented here may differ slightly from figures that will be available at a later date.

THE FOLLOWING SUMMARIZES SEVERAL CATEGORIES OF 1988 TRAFFIC CRASHES:

GENERAL INFORMATION

Minnesota's fatality rate per hundred million vehicle miles traveled rose to 1.69 in 1988. This was 12 percent greater than the record low of 1.51 in 1987, though still much lower than the national rate of 2.4. The total number of crashes exceeded 100,000 for the first time since 1980, with almost 8,000 more than 1987. The increase may in part be a function of more dangerous road conditions caused by inclement weather. In 1987, there were fewer than 11,000 crashes on snow and ice-covered roads, compared with over 21,000 in 1988.

ALCOHOL

Over half of the people arrested for DWI in 1988 were under the age of 30. More than 60% of the injuries and fatalities were suffered by this age group. It is estimated that 277 of the fatalities (45%) and 6,531 of the injuries (15%) were alcohol-related.

RESTRAINT USE BY MOTOR VEHICLE OCCUPANTS

According to observational surveys, restraint use by front seat vehicle occupants in Minnesota increased from 20% to about 32% after the 1986 seat belt law was passed. Usage stayed at that level through 1987 and then increased to an estimated 47% in August, 1988, following an amendment adding a $10 fine to the law. Among vehicle occupants killed or injured in crashes, restraint use averaged about 40%, but it was less likely among those who were killed or injured than among those who received moderate or minor injuries. Also, in terms of age groups, usage was lowest among 11 to 20 year olds and then tended to increase for successive age groups.

MOTORCYCLES

The number of motorcycle crashes continued to decrease in 1988; there were 1,969 crashes, 1,817 injuries and 58 fatalities. The percentage of crashes that were fatal continued to be higher for motorcycles than for the combination of all motor vehicles. Males suffered 98% of the fatalities and 87% of the injuries.

TRUCKS

There were 7,038 truck crashes in 1988--a 24% increase over 1987's 5,668, but only 3% more than the prior three year average. At least part of the increase appears attributable to hazardous road surface conditions: over 1,400 of the 1988 crashes occurred on snow and ice-covered roads, compared with fewer than 600 in 1987. Over half the truck drivers were under 36 years of age. Driver inattention was the most commonly cited contributing factor. Alcohol impairment was cited for only 1% of the truck drivers and 3% of the other vehicle drivers.

PEDESTRIANS

There were 1,575 crashes that involved pedestrians; these resulted in 69 fatalities and 1,566 injuries in 1988. Children between the ages of 5 and 9 remain the group that suffers the most injuries. Forty-two percent of the fatalities were under the age of 30.

BICYCLISTS

Young people between the ages of 5 and 19 made up 61% of the 1,401 injuries and 38% of the 16 fatalities from the 1,448 crashes with bicycles in 1988. Bicycle crashes continue to be highest in the after school hours on weekdays. There were more than twice as many males killed and injured as there were females.

SCHOOL BUS CRASHES

Three people died in collisions with school buses in 1988; all three were drivers of another vehicle. No school bus occupants were killed. There were 679 crashes which resulted in 359 injuries in addition to the three fatalities. Before and after school hours are when two-thirds of the accidents occurred. The majority of school bus crashes involved two moving vehicles.

MOTOR VEHICLE/TRAIN CRASHES

The 168 motor vehicle/train crashes resulted in 12 fatalities and 70 injuries. Young people between the ages of 10 and 29 accounted for 49% of the injuries and 67% of the fatalities. The after school hours of 3:00 to 6:00 PM had the highest number of accidents.

TABLE 1.01

CRASH, FATALITY AND INJURY RATES, 1979-1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Traffic Crashes	120,633	103,612	97,879	89,443	97,371	93,741	99,168	95,460	94,095	102,094
Traffic Fatalities	881	863	763	581	558	584	610	572	530	615
Traffic Injuries	49,604	45,227	43,739	38,692	41,086	41,808	44,316	42,130	42,091	44,415
Registered Motor Vehicles (Millions of Vehicles)	3.00	3.01	3.09	3.01	3.03	3.13	3.22	3.25	3.31	3.39
Licensed Drivers* (Millions of Drivers)	2.73	2.77	2.83	2.87	2.90	2.91	3.04	3.07	3.10	3.13
Vehicular Miles Traveled (Billions of Miles)	29.0	28.5	28.6	29.2	30.5	32.2	33.1	34.2	35.1	36.4
Fatality Rate Per Hundred Million Vehicle Miles Traveled	3.04	3.03	2.67	1.98	1.83	1.81	1.84	1.67	1.51	1.69
Fatality Rate Per 100,000 Registered Vehicles	29.3	28.7	24.7	19.3	18.4	18.7	18.9	17.6	16.0	18.1
Fatality Rate Per 100,000 Population	21.7	21.2	18.6	14.2	13.5	14.1	14.7	13.6	12.6	14.3
Crash Rate Per Hundred Million Vehicle Miles Traveled	417	364	342	304	319	291	300	279	268	280
Crash Rate Per 100,000 Registered Vehicles	4,018	3,446	3,163	2,972	3,214	2,995	3,080	2,937	2,840	3,012
Crash Rate Per 100,000 Population	2,971	2,546	2,387	2,181	2,356	2,262	2,380	2,266	2,233	2,371

* Permits included.

TABLE 1.02

TRAFFIC CRASH TRENDS
1983 - 1988

	1983	1984	1985	1986	1987	1983-1987 Average	1988	Record High	
Total Crashes	97,371	93,741	99,168	95,460	94,095	95,967	102,094	123,106	(1975)
Fatal	501	519	538	506	466	506	545	N.A.	
Severe Injury	4,831	5,109	5,038	4,437	4,566	4,796	4,386	N.A.	
Moderate Injury	11,892	11,951	12,326	11,610	11,517	11,859	11,066	N.A.	
Minor Injury	11,950	11,817	13,274	13,179	13,262	12,696	15,291	N.A.	
Property Damage	68,197	64,345	67,992	65,728	64,284	66,109	70,806	N.A.	
Total Injuries	41,086	41,808	44,316	42,130	42,621	42,392	44,415	50,332	(1978)
Total Fatalities	558	584	610	572	530	571	615	1,060	(1968)
Pedestrian	62	55	65	71	62	63	69	157	(1971)
Motor vehicle/Train*	15	11	13	12	4	11	12	62	(1932)
Bicycle	14	15	10	12	15	13	16	24	(1977)
Motorcycle	66	62	77	66	51	64	58	121	(1980)
3-Wheel Vehicle	9	4	1	9	2	5	1	9	(1986)
Snowmobile	4	9	3	5	0	4	4	9	(1984)
Motor Vehicle Occupants	398	430	441	402	396	413	N.A.	459	N.A.
Fatality Rate**	1.83	1.81	1.84	1.67	1.51	1.73	1.69	23.6	(1934)
U.S. Fatality Rate**	2.70	2.68	2.58	2.60	2.60	2.63	2.4	18.0	(1925)
Minnesota Economic Loss (millions)	$393.3	$443.9	$480.9	$445.7	$506.4	$454.0	$579.9	$579.9	

* Fatalities occurring in motor vehicle/train crashes are included in other categories as well.
** Rate is based upon per 100 million vehicle miles of travel.

N.A. = Not Available

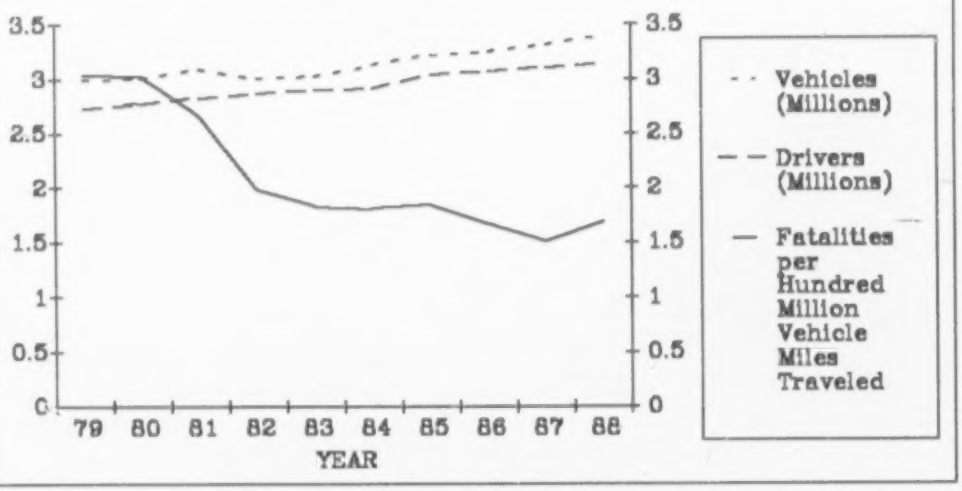
GENERAL INFORMATION

Although the number of licensed drivers and registered vehicles increases gradually from year to year, highway safety has been improving during the 1980s. Figure 1.01 shows a generally downward trend over the past ten years in the number of fatalities expressed as a rate per hundred million vehicle miles traveled. There was, however, a marked increase in 1988.

The following sections provide summary descriptions of the 1988 crashes in terms of the people involved, the conditions, the locations where they occurred, and the times when they occurred.

FIGURE 1.01

Vehicles, Drivers, and Fatality Rates 1979 – 1988



WHO was involved

In 1988 there were 102,094 crashes involving 186,791 motor vehicle drivers, 1,456 bicyclists, and 1,635 pedestrians. There were 615 people killed. Almost half (299) were car or truck drivers, and another quarter (156) were car or truck passengers. The remaining 160 included 69 pedestrians, 58 motorcyclists, and 16 bicyclists. (Table 1.03) Of the 44,415 persons injured, 87% (38,610) were car, truck, pickup, or van occupants. The remaining 5,805 included 1,566 pedestrians, 1,817 motorcyclists, and 1,401 bicyclists. (Table 1.06)

Given the 3,127,029 persons holding Minnesota drivers licenses, there was one crash-involved driver for every seventeen licensed drivers. The crash-involved drivers were disproportionately young. Sixteen to twenty year olds comprised 17% of the crash-involved drivers, but 9% of the driving population; 21 to 25 year olds were also over-involved. Age groups after age 30 were underrepresented. (Tables 1.07, 1.11, Figure 1.03) Also, at each age group, males made up about 62% of the crash-involved drivers. (Table 1.10)

Collision with another motor vehicle was by far the type of crash in which drivers of all ages were most likely to be involved. There was slight variation by age, with 87% of drivers over 65 involved in this type of crash, versus 78% of the 16 to 20 years olds. The younger drivers, on the other hand, were slightly more likely than older drivers to run into fixed objects, or to be involved in overturns, the next two most likely crash types. Other crash types, such as collision with a railroad train, or pedestrian, or animal, were relatively rare. (Table 1.08)

The contributing factors cited most often in multiple vehicle crashes were driver inattention (fairly constant across age groups), failure to yield right of way (more common among over-65 drivers), and illegal or unsafe speed (less common among over-65 drivers). In the single-vehicle crashes, driver inattention was again cited most often. The three next most common contributing factors, illegal or unsafe speed, driver inexperience, and physical impairment, tended to be cited less often as driver age increased. Physical impairment and illegal or unsafe speed both played a much larger role in single-vehicle crashes than in multiple-vehicle crashes. (Tables 1.12A, 1.12B)

WHAT the conditions were

Passenger cars accounted for about 74% of the vehicles registered in Minnesota and about 73% of the vehicles involved in crashes. The corresponding figures for pickups are 15% and 12%; for trucks, 4% and 4%; for motorcycles, 4% and 1%. Thus there was no conspicuous over-involvement within broad vehicle types. (Tables 1.20, 1.21)

Of the 102,094 total crashes, 63% occurred during daylight hours, 60% occurred during clear weather conditions, and 63% occurred on dry road surfaces. Thus, most crashes occurred under optimal driving conditions. (Tables 1.15, 1.16, 1.18)

A comparison of 1988 with 1987 shows that the conditions that changed the most were related to road surface conditions. In 1988, 21% (21,208) of the crashes occurred on snow and ice-covered roads, compared with 12% (10,964) in 1987. Other factors changed much less, in percentage terms, from the preceding year. (Table 1.18)

In 1988, 41% of total crashes occurred on two-way, two-lane roads, 19% on freeways or other divided highways, and 16% on four-to-six lane, undivided roadways. (Table 1.19) These figures vary by a percentage point or less from the corresponding 1987 figures.

WHERE they happened

In urban areas, traffic congestion may be greater and speeds slower, resulting in more numerous, but less severe crashes. In 1988, 70% of all crashes occurred in urban areas, while 68% of the 545 fatal crashes occurred on rural roadways, especially the federal and state trunk highways and county-state-aid highways. Of the 373 fatal crashes in rural areas, only 19 (the same as in 1987) occurred on rural interstates, even though those highways carry a disproportionate share of rural traffic. (Table 1.22, Figure 1.04)

Half or more of the crashes at each severity level occurred where no stop light or other traffic control device was present. About 18,000 crashes occurred at a stop sign-regulated intersection. Almost 90% of those occurred when there wasn't a stop sign at all approaches. (Table 1.23)

While total crashes throughout the state increased 6% over the prior five-year average, the increase was not uniformly experienced by counties. Nine counties had increases of 20% or more. These counties (Kittson, Roseau, Cook, Kanabec, Pine, Sherburne, Steele, Jackson, and Lincoln) appear randomly distributed throughout the state. Eight counties (Red Lake, Grant, Pope, Kandiyohi, Swift, Chippewa, Lac Qui Parle, and Yellow Medicine) had decreases of 8% or more. Seven of these eight counties are concentrated adjacent to one another in the west central and southwest region parts of the state. (Table 1.25)

WHEN they occurred

In 1988, almost a third of the total crashes, most of which only involve property damage, occurred in the three months of January, November, and December. By contrast, the warmer months of May, July, and August accounted for just over a third of the fatal crashes. (Table 1.27)

Fatal and less serious crashes alike peak during the later afternoon hours of about 3:00 PM to 6:00 PM. However, fatal crashes peak again between 12:00 midnight and 2:00 AM. (Figure 1.06).

Among days of the week, Friday and Saturday accounted for a slightly disproportionate share of both total and fatal crashes. Fatal crashes were most numerous on Saturday, followed by Friday. Total crashes were highest on Friday, followed by Saturday. (Table 1.28)

Labor Day was the most hazardous holiday during the 1988 calendar year: there were nine fatal crashes and twelve fatalities. This is a six-year high. (Table 1.29)

TABLE 1.03

1988 FATALITIES BY TRAFFIC ROLE AND AGE

Traffic Role	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 & Older	Unknown	Total
Car/Truck Driver	0	45	96	49	32	20	22	35	0	299
Car/Truck Passenger	17	43	36	11	10	9	9	20	1	156
Pedestrian	7	11	10	6	5	10	5	14	1	69
Bicyclist	3	4	4	2	0	2	0	1	0	16
Motorcycle Driver/ Passenger	0	14	28	11	2	3	0	0	0	58
All-Terrain Vehicle Driver/Passenger	0	0	0	0	1	0	0	0	0	1
Snowmobile Driver/Passenger	0	2	0	1	0	1	0	0	0	4
Other/Unknown	0	3	5	2	0	1	1	0	0	12
Total	27	122	179	82	50	46	37	70	2	615

TABLE 1.04

1988 FATALITIES BY TRAFFIC ROLE AND SEX

Traffic Role	Male		Female		Total
Car/Truck Driver	216	(72.2%)	83	(27.8%)	299
Car/Truck Passenger	79	(50.6%)	76	(48.7%)	156 *
Motorcycle Driver	52	(100.0%)	0		52
Motorcycle Passenger	5	(83.3%)	1	(16.7%)	6
Pedestrian	46	(66.7%)	23	(33.3%)	69
Bicyclist	11	(68.8%)	5	(31.3%)	16
Moped Driver	2	(100.0%)	0		2
Snowmobile Driver	4		0		4
All-Terrain Vehicle Driver	1	(100.0%)	0		1
Other/Unknown	10	(100.0%)	0		10
Total	426	(69.3%)	188	(30.6%)	615 *

* These totals include one person for whom sex was not reported.

FIGURE 1.02

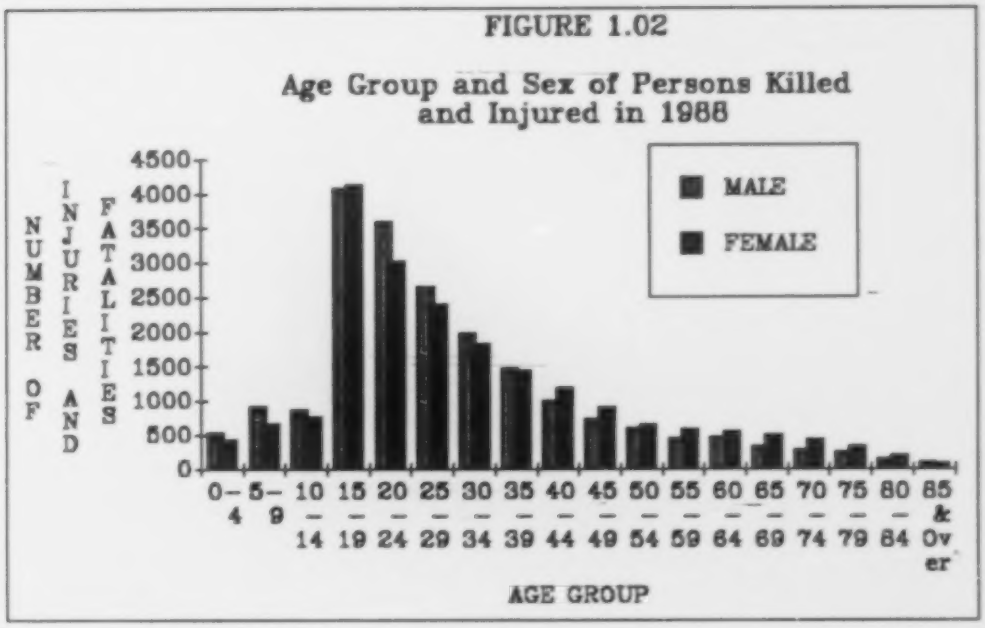


TABLE 1.05

AGE AND SEX OF PERSONS KILLED OR INJURED IN 1988 CRASHES

	Persons Killed			Persons Injured		
Age Group	Male	Female	Total	Male	Female	Total*
0 - 4	6	6	12	539	442	986
5 - 9	13	4	17	926	677	1,605
10 - 14	11	14	25	867	774	1,641
15 - 19	70	25	95	4,019	4,125	8,146
20 - 24	76	30	106	3,530	3,000	6,533
25 - 29	54	15	69	2,606	2,401	5,011
30 - 34	37	10	47	1,954	1,828	3,784
35 - 39	29	7	36	1,454	1,449	2,903
40 - 44	13	9	22	1,013	1,199	2,213
45 - 49	15	12	27	740	898	1,639
50 - 54	19	5	24	601	660	1,263
55 - 59	13	9	22	457	589	1,046
60 - 64	14	5	19	473	560	1,033
65 - 69	11	6	17	336	505	841
70 - 74	12	12	24	288	435	723
75 - 79	9	10	19	247	332	579
80 - 84	8	6	14	158	209	367
85 & Over	7	5	12	100	97	197
Not Stated	6	2	8	1,801	1,815	3,905
Total	423	192	615	22,109	21,995	44,415

* Many totals do not add across because sex is not always indicated on the accident report.

TABLE 1.06

PEOPLE KILLED AND INJURED IN VARIOUS VEHICLE TYPES, 1988

Vehicle Type	Fatalities	Severe Injuries	Moderate Injuries	Possible Injuries	Total
Passenger Car	355	3,334	10,812	17,871	32,372
Passenger Car & Trailer	0	0	12	24	36
Truck or Truck Tractor	4	45	142	198	389
Truck Tractor and Semi-Trailer	3	18	83	134	238
Truck Tractor with Twin Trailer	0	0	2	7	9
Truck With Other Trailer	0	2	8	17	27
Pickup Truck	76	590	1,639	2,214	4,519
Van	21	138	505	815	1,479
Motorcycle	58	546	868	403	1,875
Motorscooter/Motorbike	1	22	28	14	65
Motorized Bicycle*	2	14	27	16	59
All Terrain Vehicle	1	26	19	8	54
School Bus	0	7	43	144	194
Bus	0	5	17	73	95
Motorhome/Camper	0	6	15	10	31
Snowmobile	4	15	18	11	48
Farm Equipment	3	6	19	14	42
Taxicab	0	7	18	58	83
Hit and Run Vehicle	1	20	63	94	178
Police Vehicle	0	11	28	62	101
Fire Department Vehicle	0	0	1	3	4
Ambulance	0	1	7	4	12
Military Vehicle	0	0	0	0	0
Road Maintenance Vehicle	0	0	4	7	11
Bicycle	16	231	702	468	1,417
Pedestrian	69	441	501	624	1,635
Other/Unknown	1	16	12	28	57
Total	615	5,501	15,593	23,321	45,030

*Formerly referred to as moped.

TABLE 1.07

DRIVER LICENSE* SUMMARY BY AGE, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15 & Under	12,781	12,388	12,788	13,083	13,867	14,686	13,116	11,920	12,301	13,387
16 - 20	358,538	350,345	336,396	322,178	309,682	293,333	290,992	289,349	287,990	282,563
21 - 25	375,865	382,179	391,613	394,187	394,066	386,945	388,026	370,163	354,138	341,651
26 - 30	344,843	353,844	364,655	368,033	372,428	375,738	399,040	400,606	401,331	399,978
31 - 35	283,854	299,522	318,948	328,663	335,037	341,865	360,804	367,520	372,253	378,540
36 - 40	227,471	235,457	241,625	256,066	268,572	279,592	303,775	320,399	327,488	334,403
41 - 45	185,076	188,861	196,504	202,863	213,187	222,389	235,597	239,289	255,522	267,103
46 - 50	172,582	172,042	172,881	173,958	176,424	181,034	188,847	193,823	200,623	211,134
51 - 55	175,052	173,275	173,292	172,158	170,075	167,334	169,734	169,349	170,480	172,894
56 - 60	162,895	165,954	167,906	167,281	167,734	167,301	168,778	167,774	166,224	164,406
61 - 65	144,333	144,819	146,638	149,763	151,671	151,966	158,218	158,781	158,883	159,371
66 - 70	115,001	117,727	121,826	125,456	127,288	129,482	134,695	136,032	138,909	140,847
71 & Older	167,127	169,619	180,825	192,357	197,111	199,140	227,696	241,240	255,811	260,752
Total	2,725,418	2,766,032	2,825,897	2,866,046	2,897,142	2,910,805	3,039,318	3,066,245	3,101,953	3,127,029

* Includes Learner's Permits

TABLE 1.08

PERCENT OF DRIVERS IN AN AGE GROUP BY ACCIDENT TYPE, 1988

Accident Type	Drivers 16-20	Drivers 21-25	Drivers 26-30	Drivers 31-35	Drivers 36-65	Drivers 66 & Over
Collision With:						
Other Motor Vehicle	77.6%	80.3%	81.8%	82.7%	83.7%	87.0%
Parked Motor Vehicle	3.5%	2.6%	2.5%	2.2%	2.2%	3.2%
Railroad Train	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Bicycle	0.6%	0.6%	0.7%	0.8%	0.9%	1.1%
Pedestrian	0.8%	0.8%	0.9%	0.8%	0.9%	0.9%
Animal	2.0%	2.4%	3.0%	3.4%	4.0%	2.3%
Fixed Object	9.1%	7.9%	6.5%	5.8%	4.7%	3.8%
Other Object	0.5%	0.5%	0.5%	0.5%	0.5%	0.3%
Non-Collision:						
Overturn	5.0%	4.0%	3.3%	2.9%	2.2%	1.0%
Other	0.8%	0.8%	0.8%	0.9%	0.8%	0.4%
Total Number	32,348	27,571	23,805	18,583	49,923	10,404

Percentages are based on the number of accident-involved drivers in each age group. They may not sum to 100 due to rounding. Bicyclists and pedestrians are not included.

TABLE 1.09

DRIVERS IN 1988 CRASHES BY PHYSICAL CONDITION*

Physical Condition	Drivers in Fatal Crashes	Drivers in Injury Crashes	Drivers in Property Damage Crashes	Drivers in All Crashes
Normal	459	40,285	78,956	119,700
Under the Influence	66	2,332	2,103	4,501
Had Been Drinking	107	2,007	1,775	3,889
Had Been Using Drugs	1	38	36	75
Asleep	7	378	312	697
Fatigued	1	166	151	318
Ill	4	121	90	215
Handicapped	2	37	75	114
Other	21	264	380	665
Unknown	184	9,286	47,147	56,617
Total	852	54,914	131,025	186,791

* As noted by police officer on accident report. Pedestrians and bicyclists are not included.

TABLE 1.10

AGE AND SEX OF DRIVERS IN 1988 CRASHES*

	Drivers in Fatal Crashes				Drivers in All Crashes			
Age Group	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
15 & Under	4	2	0	6	395	217	1	613
16 - 20	124	41	0	165	19,935	12,404	9	32,348
21 - 25	98	35	0	133	17,049	10,516	6	27,571
26 - 30	94	28	0	122	14,881	8,913	11	23,805
31 - 35	66	23	0	89	11,496	7,073	14	18,583
36 - 40	45	11	0	56	9,058	5,959	4	15,021
41 - 45	33	14	0	47	6,565	4,327	4	10,896
46 - 50	39	12	0	51	4,827	2,933	1	7,761
51 - 55	28	5	0	33	3,986	2,247	2	6,235
56 - 60	32	2	0	34	3,513	1,887	0	5,400
61 - 65	16	6	0	22	3,055	1,554	1	4,610
66 - 70	19	5	0	24	2,373	1,316	0	3,689
71 - 75	10	8	0	18	1,850	1,120	3	2,973
76 - 80	7	5	0	12	1,294	820	1	2,115
81 - 85	12	2	0	14	799	378	0	1,177
86 & Over	8	0	0	8	351	99	0	450
Not Stated	0	1	17	18	4,098	2,271	17,175	23,544
Total	635	200	17	852	105,525	64,034	17,232	186,791

* Most crashes involve more than one driver. For that reason, the total number of drivers involved in crashes listed here will be greater than the total number of crashes. Pedestrians and bicyclists are not included.

TABLE 1.11

LICENSED VS. CRASH-INVOLVED DRIVERS BY AGE, 1988*

Age Group	Percent of All Licensed Drivers	Percent of Drivers in Fatal Crashes	Percent of Drivers in Injury Crashes	Percent of Drivers in Property Damage Crashes	Percent of Drivers in All Crashes
15 & Under	0.4	0.7	0.5	0.3	0.3
16 - 20	9.0	19.4	19.7	16.3	17.3
21 - 25	10.9	15.6	15.7	14.3	14.8
26 - 30	12.8	14.3	13.5	12.4	12.7
31 - 35	12.1	10.4	10.6	9.7	9.9
36 - 40	10.7	6.6	8.4	7.9	8.0
41 - 45	8.5	5.5	6.0	5.7	5.8
46 - 50	6.8	6.0	4.4	4.0	4.2
51 - 55	5.5	3.9	3.4	3.3	3.3
56 - 60	5.3	4.0	2.9	2.9	2.9
61 - 65	5.1	2.6	2.6	2.4	2.5
66 - 70	4.5	2.8	2.0	2.0	2.0
71 - 75	3.7	2.1	1.7	1.6	1.6
76 - 80	2.6	1.4	1.2	1.1	1.1
81 - 85	1.4	1.6	0.7	0.6	0.6
86 & Over	0.7	0.9	0.3	0.2	0.2
Not Stated	0.0	2.1	6.5	15.2	12.6
Total Number	3,127,029	852	54,914	131,025	186,791

* Includes drivers with instruction permits.
** Percents may not sum to 100 due to rounding.

FIGURE 1.03

Licensed vs. Crash-Involved Drivers by Age Group, 1988

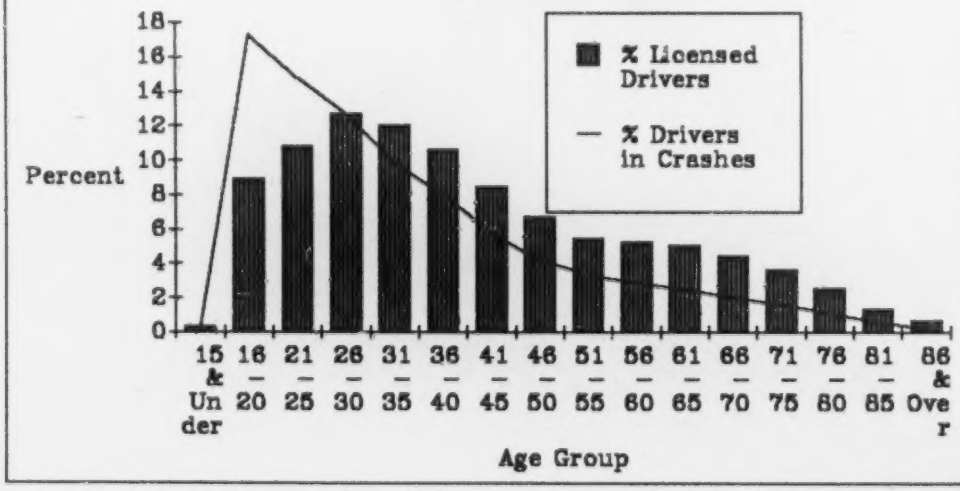


TABLE 1.12A

FACTORS CONTRIBUTING TO MULTIPLE-VEHICLE CRASHES, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1988

Contributing Factor	Drivers 16-20	Drivers 21-25	Drivers 26-30	Drivers 31-35	Drivers 36-65	Drivers 66 & Above
Driver Inattention/Distraction	25.1%	26.0%	27.0%	26.2%	27.2%	26.1%
Failure to Yield Right of Way	19.1%	16.8%	16.9%	18.1%	20.5%	33.9%
Illegal/Unsafe Speed	10.9%	12.5%	10.6%	9.6%	7.9%	3.4%
Following Too Closely	7.9%	9.8%	9.6%	9.1%	6.9%	3.4%
Disregard for Traffic Control Device	4.3%	5.4%	4.6%	4.3%	5.3%	6.4%
Driving Left of Center-- Not Passing	1.4%	1.1%	1.4%	1.2%	1.2%	0.8%
Improper Passing/Overtaking	2.2%	2.0%	2.0%	2.2%	1.8%	1.6%
Improper/Unsafe Lane Use	3.5%	4.4%	4.8%	4.5%	4.8%	4.9%
Improper Parking/Starting/Stopping	1.0%	1.1%	1.1%	1.2%	1.3%	1.5%
Improper Turn	2.7%	2.4%	2.5%	2.7%	3.4%	4.8%
Unsafe Backing	1.1%	1.0%	1.3%	1.1%	1.4%	1.5%
Improper or No Signal	0.4%	0.4%	0.4%	0.7%	0.5%	0.6%
Impeding Traffic	0.3%	0.5%	0.3%	0.4%	0.4%	0.4%
Driver Inexperience	7.3%	1.7%	1.1%	0.8%	0.8%	0.5%
Physical Impairment	1.3%	2.8%	3.2%	3.1%	2.4%	1.7%
Vision Obscured	3.6%	3.3%	3.6%	4.2%	4.6%	3.7%
Defective Equipment	1.4%	1.4%	1.8%	2.0%	1.5%	0.6%
Weather	3.3%	4.0%	4.1%	4.4%	4.3%	1.9%
Other	3.2%	3.4%	3.6%	4.0%	3.8%	2.2%
Total Percent	100%	100%	100%	100%	100%	100%
Total Contributing Factors Cited	21,803	15,204	12,003	8,712	22,845	7,545
No Improper Driving	7,349	7,749	7,521	6,306	17,581	2,537
Total Number of Drivers	25,115	22,139	19,476	15,369	41,795	9,050

Percentages are based on all contributing factors cited within each age group. The percentages may not sum to 100 due to rounding. Bicyclists and pedestrians are excluded.

TABLE 1.12B

FACTORS CONTRIBUTING TO SINGLE-VEHICLE CRASHES, BY PERCENT, WITHIN DRIVER AGE GROUPS, 1988

Contributing Factor	Drivers 16-20	Drivers 21-25	Drivers 26-30	Drivers 31-35	Drivers 36-65	Drivers 66 & Above
Driver Inattention/Distraction	20.5%	21.3%	22.0%	22.5%	23.5%	31.9%
Failure to Yield Right of Way	1.5%	2.2%	2.1%	2.7%	3.2%	6.9%
Illegal/Unsafe Speed	24.7%	24.6%	22.2%	21.8%	18.1%	8.0%
Following Too Closely	0.5%	0.8%	0.6%	0.6%	0.6%	0.4%
Disregard for Traffic Control Device	1.0%	1.0%	1.4%	1.0%	1.0%	1.8%
Driving Left of Center--						
Not Passing	1.9%	2.2%	2.1%	1.9%	1.3%	1.9%
Improper Passing/Overtaking	0.5%	0.7%	0.7%	0.4%	0.7%	1.3%
Improper/Unsafe Lane Use	3.5%	4.6%	4.8%	4.6%	4.5%	6.2%
Improper Parking/Starting/Stopping	0.3%	0.5%	0.8%	0.5%	1.3%	2.3%
Improper Turn	1.0%	1.1%	1.3%	1.2%	1.9%	2.0%
Unsafe Backing	1.4%	1.2%	1.3%	1.4%	1.8%	3.5%
Driver Inexperience	17.8%	5.0%	4.2%	3.3%	3.1%	1.8%
Physical Impairment	10.5%	17.5%	18.5%	16.3%	14.3%	13.3%
Vision Obscured	1.7%	1.8%	2.2%	2.4%	2.7%	3.3%
Defective Equipment	3.0%	3.6%	3.7%	4.9%	5.4%	4.2%
Weather	3.9%	5.3%	5.3%	7.0%	8.1%	3.9%
Other	6.3%	6.8%	6.9%	7.4%	8.6%	7.3%
Total Percent	100%	100%	100%	100%	100%	100%
Total Contributing Factors Cited	8,542	5,718	3,991	2,710	5,762	1,109
No Improper Driving	1,299	1,238	1,223	1,041	2,975	373
Total Number of Drivers	7,233	5,432	4,329	3,214	8,128	1,354

Percentages are based on all contributing factors cited within each age group. The percentages may not sum to 100 due to rounding. Bicyclists and pedestrians are excluded.

TABLE 1.13

1988 CRASHES AND INJURIES BY ACCIDENT TYPE*

Type of Crash	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Killed	Total Injured	Fatality Rate Per 1,000 Crashes
Collision With:							
Another Motor Vehicle	68,537	251	19,594	48,692	298	30,457	4.4
Parked Motor Vehicle	6,869	3	712	6,154	3	936	0.4
Railroad Train	168	9	56	103	12	70	71.4
Bicycle	1,435	16	1,370	49	16	1,413	11.1
Pedestrian	1,525	63	1,461	1	65	1,561	42.6
Animal	4,904	4	318	4,582	4	370	0.8
Fixed Object	11,346	90	3,718	7,538	99	4,770	8.7
Other Object	697	4	197	496	4	246	5.7
Non-Collision:							
Overturn	5,370	91	2,839	2,440	100	3,995	18.6
Fire/Explosion	166	2	14	150	2	16	12.0
Submersion	20	1	10	9	1	15	50.0
Other	1057	11	454	592	11	566	10.4
Total	102,094	545	30,743	70,806	615	44,415	6.0

TABLE 1.14

1988 "HIT-AND-RUN" CRASHES AND INJURIES BY ACCIDENT TYPE*

Type of Crash	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Killed	Total Injured
Collision With:						
Other Motor Vehicle	3,607	4	667	2,936	4	888
Parked Motor Vehicle	3,011	0	60	2,951	0	72
Railroad Train	4	0	0	4	0	0
Bicycle	162	1	153	8	1	154
Pedestrian	164	3	161	0	3	163
Animal	13	0	1	12	0	1
Fixed Object	1,128	0	105	1,023	0	122
Other Object	51	0	8	43	0	9
Non-Collision:						
Overturn	94	1	29	64	1	41
Fire/Explosion	1	0	0	1	0	0
Other/Unknown	64	0	11	53	0	10
Total	8,299	9	1,195	7,095	9	1,460

* The type of crash is determined by the first harmful event.

TABLE 1.15

1988 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Daylight	261	19,628	44,099	63,988
Dawn/Dusk	50	1,970	5,196	7,216
Dark/Street Lights On	75	5,250	12,129	17,454
Dark/No Street Lights	155	3,664	7,142	10,961
Other/Unknown	4	231	2,240	2,475
Total	545	30,743	70,806	102,094

TABLE 1.16

1988 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Clear	363	19,480	41,770	61,613
Cloudy	125	6,778	15,137	22,040
Rain	17	1,777	4,091	5,885
Snow	17	1,531	5,320	6,868
Sleet/Hail	2	194	640	836
Fog/Smog/Smoke	8	320	651	979
Blowing Sand/Dust	7	346	768	1,121
Severe Crosswinds	1	38	105	144
Other	2	35	185	222
Not Stated/Unknown	3	244	2,139	2,386
Total	545	30,743	70,806	102,094

TABLE 1.17

APPARENT CONTRIBUTING FACTORS IN 1988 CRASHES

Apparent Contributing Factors	Crash Severity: Fatal Crashes	Crash Severity: Personal Injury Crashes	Crash Severity: Property Damage Crashes	Number of People* Affected by the Factor: Killed	Number of People* Affected by the Factor: Injured
Human Factors:					
Illegal/Unsafe Speed	21.8%	12.7%	12.5%	214	8,821
Driver Inattention/ Distraction	14.6%	25.0%	24.7%	135	16,928
Physical Impairment	16.2%	7.5%	3.4%	160	4,995
Failure to Yield Right of Way	9.1%	15.5%	15.2%	92	10,916
Driving Left of Roadway Center--Not Passing	7.8%	1.8%	1.3%	80	1,416
Pedestrian Violation/Error	3.0%	1.4%	0.0%	26	703
Disregard For Traffic Control Device	5.4%	5.4%	3.3%	57	3,985
Driver Inexperience	2.2%	4.4%	3.8%	21	3,062
Improper/Unsafe Lane Use	2.5%	3.3%	5.9%	26	2,099
Vision Obscured	1.4%	3.2%	3.4%	14	2,042
Improper Passing/ Overtaking	1.4%	1.3%	2.1%	14	867
Improper Parking/ Starting/Stopping	0.7%	0.9%	1.3%	6	597
Improper Turn	1.3%	1.9%	3.1%	11	1,316
Impeding Traffic	0.1%	0.3%	0.3%	1	216
Following Too Closely	0.8%	5.5%	6.3%	10	3,698
Unsafe Backing	0.3%	0.4%	2.0%	3	222
Improper or No Signal	0.3%	0.3%	0.4%	3	183
Vehicular Factors:					
Defective Equipment	1.4%	2.0%	2.1%	31	2,356
Skidding	2.3%	2.2%	2.8%	4	502
Miscellaneous Factors:					
Weather	5.7%	3.2%	4.4%	61	2,326
Other	1.6%	1.7%	1.6%	20	1,066
Total Percent**	100%	100%	100%		
Total Contributing Factors Cited	864	46,039	79,163		

* Many persons injured or killed are affected by more than one contributing factor.
** Percentages may not sum to 100 due to rounding.

For contributing factors broken down by driver age, see Tables 1.12A and 1.12B.

TABLE 1.18

1988 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Dry	436	21,300	42,759	64,495
Wet	39	3,988	8,987	13,014
Snow/Slush	10	1,227	4,143	5,380
Ice or Packed Snow	54	3,608	12,166	15,828
Other	3	295	529	827
Not Stated/Unknown	3	325	2,222	2,550
Total	545	30,743	70,806	102,094

TABLE 1.19

1988 CRASHES BY ROAD DESIGN

Road Design	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Freeway	46	2,232	6,563	8,841
Other Divided Highway	70	3,686	6,487	10,243
One-Way Street	6	822	1,490	2,318
4-6 Lanes Undivided-Two-Way	40	6,120	10,512	16,672
3 Lanes Undivided	4	182	342	528
2 Lanes Undivided-Two-Way	364	14,337	27,184	41,885
Alley/Driveway	0	181	709	890
Other	11	330	526	867
Not Stated/Unknown	4	2,853	16,993	19,850
Total	545	30,743	70,806	102,094

TABLE 1.20

TYPES OF MOTOR VEHICLES IN 1988 CRASHES*

Motor Vehicle Type	Vehicles In Fatal Crashes	Vehicles In Personal Injury Crashes	Vehicles In Property Damage Crashes	Vehicles In All Crashes
Passenger Car	504	40,680	95,138	136,322
Passenger Car & Trailer	1	55	143	199
Truck or Truck Tractor	25	1,013	3,031	4,069
Truck Tractor and Semi-Trailer	42	677	2,180	2,899
Truck Tractor and Twin Trailer	1	19	30	50
Truck With Other Trailer	3	90	229	322
Pickup	150	6,441	15,727	22,318
Van	32	1,941	4,590	6,563
Motorcycle	58	1,651	287	1,996
Motorscooter/Motorbike	1	60	7	68
Motorized Bike/Moped	2	50	3	55
All Terrain Vehicle	1	50	6	57
School Bus	3	177	504	684
Bus	2	144	417	563
Motorhome/Camper	1	36	125	162
Snowmobile	4	46	20	70
Farm Tractor or Equipment	4	76	101	181
Taxicab	1	99	256	356
Hit-and-Run Vehicle	9	1,298	7,487	8,794
Police Vehicle	2	137	284	423
Fire Department Vehicle	0	12	19	31
Ambulance	0	19	33	52
Military Vehicle	0	1	8	9
Road Maintenance Vehicle	2	54	190	246
Other Public Owner Vehicle	0	51	137	188
Other Private Owner Vehicle	4	36	73	113
Other	0	1	0	1
Total	852	54,914	131,025	186,791

* Most crashes involve more than one vehicle. For that reason, the total number of vehicles involved in crashes and listed here is greater than the number of crashes.

Bicycles and pedestrians are excluded from this table.

TABLE 1.21

MOTOR VEHICLE REGISTRATIONS, 1984 - 1988

Type of Vehicle	1984	1985	1986	1987	1988
Passenger Cars	2,258,877	2,339,782	2,395,247	2,450,232	2,518,604
Pickups	490,087	500,744	501,646	509,070	515,968
Trucks[1]	119,667	118,990	124,323	127,888	135,918
Recreational Vehicles	32,451	33,133	32,026	33,120	34,226
Motorcycles	153,851	151,449	141,261	134,590	128,956
Motorized Bicycles[2]	13,633	13,034	12,047	12,311	10,529
School Buses	3,998	4,185	4,598	5,095	5,115
Buses	3,604	3,575	3,405	3,502	3,879
Van Pool[3]	137	180	209	229	253
Tax Exempt Vehicles[4]	51,525	53,510	35,741	37,659	35,969
Motor Vehicle Subtotal	3,127,830	3,218,582	3,250,503	3,313,696	3,389,417
Trailers	615,004	602,795	663,559	653,630	726,054
Collector's Items	39,981	45,269	50,702	56,146	61,280
Grand Total	3,782,815	3,866,646	3,964,764	4,023,472	4,176,751

[1] Trucks include farm trucks, gross weight trucks, urban zone trucks, commercial zone trucks and Minnesota-based prorate trucks.

[2] Starting in 1987, motorized bicycles include those with or without pedals, 50cc and under. Prior to 1987, only those *with* pedals and under 50cc were included.

[3] Prior to 1984, van pools were registered either as passenger cars or buses, depending on the number of passengers they carried.

[4] Prior to 1986, tax-exempt vehicles were registered once only and were retained in the registration file indefinitely. Since 1986, they have been required to be registered every two years, and are dropped from the file if not re-registered.

TABLE 1.22

1988 CRASHES BY TYPE OF ROADWAY

Type of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Urban				
Interstate	22	1,491	5,190	6,703
Trunk Highway	51	5,977	13,023	19,051
County State Aid Highway	47	5,564	11,304	16,915
County Road	8	340	631	979
Local Street	44	7,287	20,511	27,842
Total	172	20,659	50,659	71,490
Rural				
Interstate	19	502	1,516	2,037
Trunk Highway	166	4,276	8,861	13,303
County State Aid Highway	132	3,191	4,963	8,286
County Road	23	537	750	1,310
Township Road	27	757	1,059	1,843
Local Street	6	682	2,248	2,936
Other Road	0	139	750	889
Total	373	10,084	20,147	30,604
All Roadways				
Interstate	41	1,993	6,706	8,740
Trunk Highway	217	10,253	21,884	32,354
County State Aid Highway	179	8,755	16,267	25,201
County Road	31	877	1,381	2,289
Township Road	27	757	1,059	1,843
Local Street	50	7,969	22,759	30,778
Other Road	0	139	750	889
Total	545	30,743	70,806	102,094

Urban = an area having a population of 5,000 or more.
Rural = an area having a population of less than 5,000.

FIG 1.04
Crashes by Location

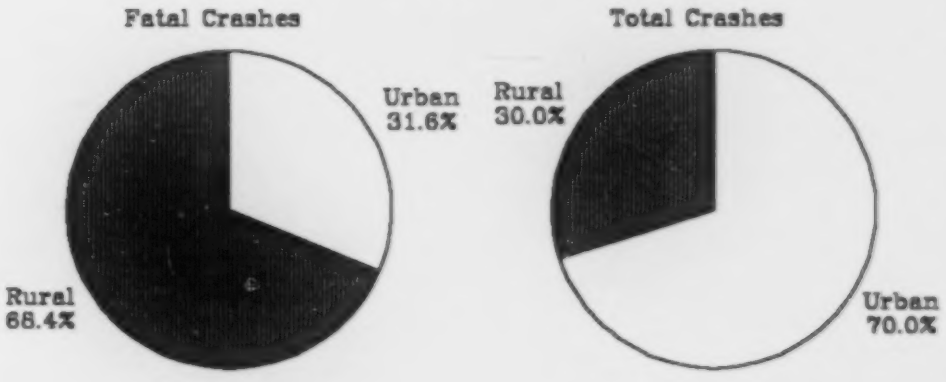


TABLE 1.23

1988 CRASHES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
None	339	16,041	40,932	57,312
Traffic Signal	32	6,348	11,969	18,349
Overhead Flashers	1	84	163	248
Stop Sign-All Approaches	3	592	1,462	2,057
Other Stop Sign	93	5,556	10,491	16,140
Yield Sign	14	590	1,224	1,828
Flagman, Officer, or School Patrol	2	50	80	132
School Bus Stop Arm	0	15	31	46
School Zone Sign	0	16	20	36
RR Crossing Gate	1	28	59	88
RR Flashing Lights	2	27	40	69
RR Crossing Stop Sign	1	10	26	37
RR Other	3	29	64	96
No Pass Zone	31	436	533	1,000
Other	16	263	488	767
Unknown	7	658	3,224	3,889
Total	545	30,743	70,806	102,094

TABLE 1.24

1988 CRASHES BY POPULATION OF AREA WHERE CRASH OCCURRED

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
100,000 & Over	48	6,875	17,875	24,798
50,000 - 99,999	16	1,713	4,379	6,108
25,000 - 49,999	37	5,655	13,072	18,764
10,000 - 24,999	39	4,294	10,147	14,480
5,000 - 9,999	32	2,122	5,186	7,340
2,500 - 4,999	15	1,072	2,409	3,496
1,000 - 2,499	16	586	1,496	2,098
Under 1,000	342	8,426	16,242	25,010
Total	545	30,743	70,806	102,094

TABLE 1.25

1988 COUNTY CRASH REPORT

County	1988 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1983-1987	Number Killed 1988	Average Killed 1983-1987	Number Injured 1988	Average Injured 1983-1987
Aitkin	1	81	155	237	232	1	3	115	127
Anoka	15	1,789	3,330	5,134	4,414	19	22	2,639	2,358
Becker	9	163	263	435	446	9	8	248	283
Beltrami	5	200	439	644	561	5	6	299	292
Benton	5	220	433	658	626	5	8	337	315
Big Stone	1	50	66	117	102	1	3	84	52
Blue Earth	6	383	1,061	1,450	1,429	6	6	548	545
Brown	5	172	357	534	492	6	3	249	220
Carlton	5	153	361	519	448	6	4	218	208
Carver	14	288	643	945	868	14	8	418	404
Cass	8	134	203	345	341	8	10	211	187
Chippewa	3	69	116	188	211	3	6	135	110
Chisago	5	208	456	669	572	5	7	295	274
Clay	7	286	904	1,197	1,138	9	4	430	442
Clearwater	1	49	73	123	105	1	3	77	67
Cook	1	30	119	150	119	1	2	49	49
Cottonwood	1	68	143	212	175	1	2	99	81
Crow Wing	11	338	770	1,119	988	11	12	511	459
Dakota	21	1,623	3,510	5,154	4,812	23	19	2,325	2,220
Dodge	6	77	169	252	235	8	3	128	113
Douglas	9	241	562	812	681	14	6	367	315
Faribault	2	70	165	237	219	2	3	112	101
Fillmore	7	110	204	321	319	10	4	170	159
Freeborn	5	205	531	741	711	10	5	290	296
Goodhue	11	298	697	1,006	888	11	7	430	437
Grant	0	31	53	84	92	0	2	48	43
Hennepin	81	9,150	21,366	30,597	29,761	91	66	12,530	12,689
Houston	4	102	219	325	282	5	3	145	139
Hubbard	0	127	155	282	241	0	5	199	152
Isanti	3	141	313	457	417	3	4	216	228

TABLE 1.25 CONT'D

1988 COUNTY CRASH REPORT

County	1988 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1983-1987	Number Killed 1988	Average Killed 1983-1987	Number Injured 1988	Average Injured 1983-1987
Itasca	6	221	416	643	607	8	8	310	340
Jackson	2	72	164	238	197	4	1	119	74
Kanabec	1	79	153	233	190	2	3	140	113
Kandiyohi	8	274	497	779	851	10	5	435	409
Kittson	1	36	54	91	73	1	3	55	42
Koochiching	1	81	128	210	224	1	3	139	133
Lac Qui Parle	1	30	57	88	113	2	3	42	45
Lake	1	51	164	216	201	1	2	75	87
Lake of The Woods	1	20	34	55	50	1	1	27	27
LeSueur	4	157	355	516	459	4	4	214	203
Lincoln	2	43	67	112	93	2	2	82	46
Lyon	3	134	228	365	342	3	5	201	193
Mcleod	8	229	508	745	646	9	8	342	280
Mahnomen	5	34	23	62	62	5	2	66	50
Marshall	1	54	77	132	124	1	2	70	80
Martin	2	132	280	414	370	2	3	205	174
Meeker	3	107	251	361	352	6	6	177	174
Mille Lacs	5	135	207	347	321	5	6	225	177
Morrison	4	169	336	509	530	6	7	276	288
Mower	3	174	534	711	713	3	6	241	308
Murray	0	33	63	96	111	0	2	77	51
Nicollet	4	128	398	530	501	5	5	190	222
Nobles	4	108	281	393	387	4	3	162	149
Norman	1	43	62	106	92	1	2	72	59
Olmsted	10	696	1,815	2,512	2,251	10	15	987	998
OtterTail	7	273	554	834	768	7	12	459	396
Pennington	2	101	137	240	245	2	2	152	141
Pine	7	145	282	434	322	7	7	228	156
Pipestone	4	50	119	173	173	5	2	88	61
Polk	11	184	365	560	574	12	5	274	277

TABLE 1.25 CONT'D

1988 COUNTY CRASH REPORT

County	1988 CRASHES Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Average Crashes 1983-1987	Number Killed 1988	Average Killed 1983-1987	Number Injured 1988	Average Injured 1983-1987
Pope	1	32	91	124	135	1	2	50	56
Ramsey	23	3,934	11,315	15,272	14,851	24	34	5,311	5,235
Red Lake	1	21	41	63	71	1	2	33	30
Redwood	4	71	126	201	216	4	2	105	108
Renville	9	84	138	231	228	10	6	137	110
Rice	9	338	810	1,157	989	11	7	525	464
Rock	2	60	149	211	194	2	1	90	70
Roseau	1	63	169	233	170	1	4	96	92
St. Louis	24	1,121	2,425	3,570	3,246	29	25	1,657	1,420
Scott	10	404	942	1,356	1,234	11	8	590	566
Sherburne	7	277	462	746	619	7	8	449	374
Sibley	1	63	146	210	222	1	4	97	118
Stearns	14	925	1,954	2,893	2,645	16	20	1,387	1,212
Steele	3	193	531	727	589	3	4	302	233
Stevens	1	43	115	159	149	1	1	64	60
Swift	1	40	83	124	143	1	2	63	66
Todd	11	143	236	390	347	14	5	239	203
Traverse	1	14	34	49	49	1	1	21	28
Wabasha	8	134	241	383	379	8	8	202	182
Wadena	0	95	179	274	244	0	3	151	115
Waseca	0	112	236	348	308	0	3	157	134
Washington	13	823	1,965	2,801	2,377	14	11	1,241	1,071
Watonwan	0	52	119	171	185	0	2	80	79
Wilkin	2	57	92	151	154	2	1	93	74
Winona	7	332	875	1,214	1,057	7	7	479	380
Wright	27	431	798	1,256	1,140	28	18	692	603
Yellow Medicine	1	32	89	122	156	1	3	52	82
Total	545	30,743	70,806	102,094	95,967	615	570	44,415	42,288

FIGURE 1.05

1988 COUNTY CRASH MAP

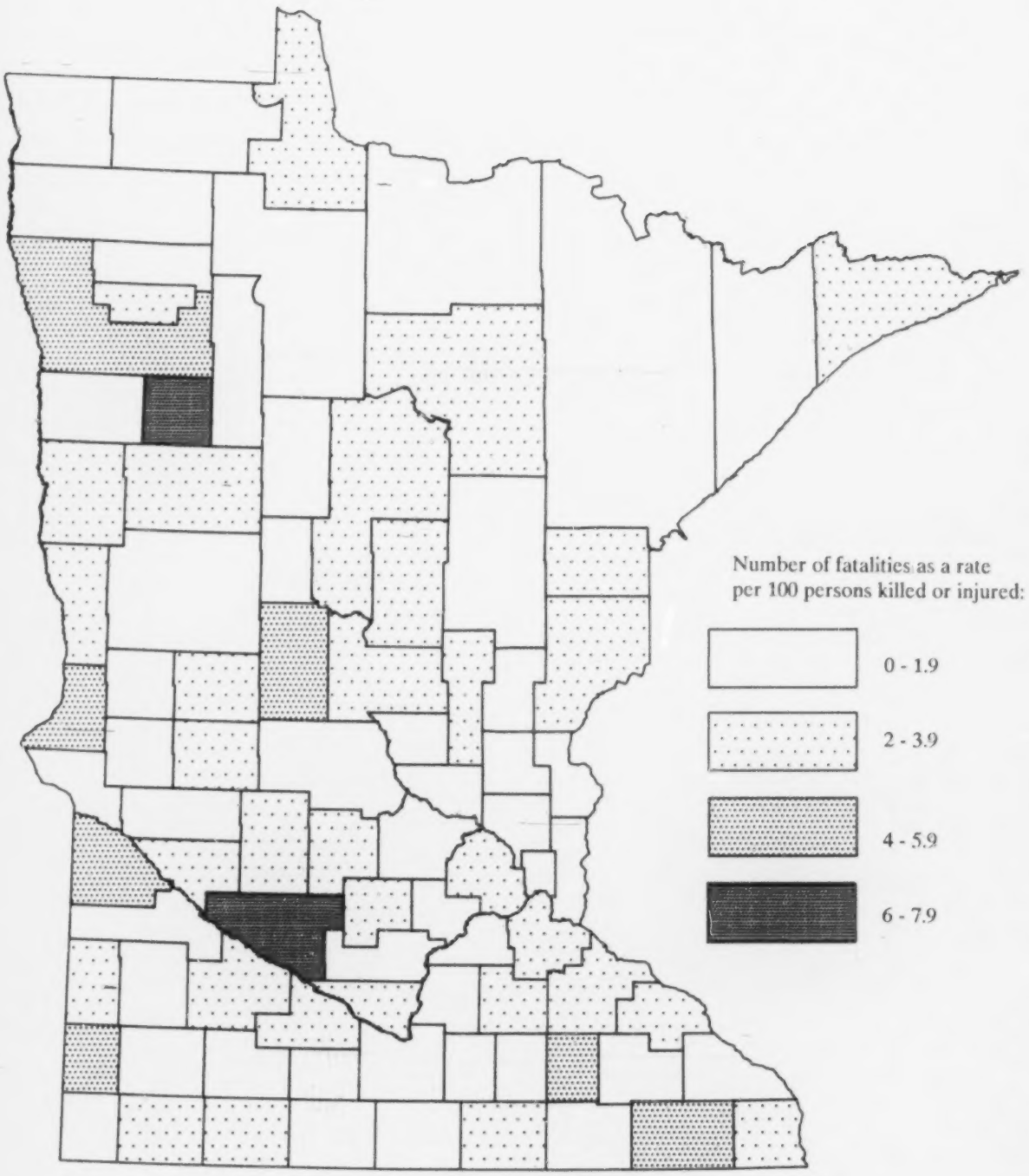


TABLE 1.26

1988 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Albert Lea	0	120	296	416	0	151
Alexandria	1	116	281	398	1	165
Andover	3	73	131	207	3	118
Anoka	0	203	344	547	0	300
Apple Valley	0	177	341	518	0	253
Arden Hills	2	66	257	325	2	101
Austin	0	90	307	397	0	114
Bemidji	1	83	301	385	1	112
Blaine	2	334	584	920	2	496
Bloomington	7	789	2,028	2,824	8	1,116
Brainerd	1	140	385	526	1	216
Brooklyn Center	1	319	672	992	1	438
Brooklyn Park	9	415	616	1,040	10	614
Buffalo	0	36	91	127	0	45
Burnsville	2	337	810	1,149	2	477
Champlin	0	57	117	174	0	89
Chanhassen	2	78	200	280	2	103
Chaska	2	53	129	184	2	76
Chisholm	0	15	46	61	0	22
Cloquet	2	52	157	211	2	68
Columbia Heights	0	120	237	357	0	164
Coon Rapids	1	395	720	1,116	1	580
Cottage Grove	2	117	269	388	2	193
Crookston	1	41	92	134	1	66
Crystal	1	137	253	391	1	193
Detroit Lakes	1	56	103	160	1	75
Duluth	5	511	1,192	1,708	5	728
Eagan	2	196	468	666	3	299
East Bethel	0	32	61	93	0	54
East Grand Forks	0	37	116	153	0	49
Eden Prairie	3	266	623	892	3	344
Edina	2	278	707	987	2	375
Elk River	0	75	148	223	0	120
Fairmont	1	62	182	245	1	88
Falcon Heights	0	43	90	133	0	60
Faribault	0	121	338	459	0	188
Farmington	1	30	56	87	1	49
Fergus Falls	1	68	210	279	1	102
Forest Lake	0	47	102	149	0	63
Fridley	4	249	581	834	6	349
Golden Valley	2	254	610	866	2	356
Grand Rapids	0	49	171	220	0	63
Ham Lake	1	80	99	180	1	125

*Cities with at least 5,000 estimated population in 1987.

TABLE 1.26 CONT'D

1988 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Hastings	0	103	217	320	0	135
Hermantown	0	39	83	122	0	58
Hibbing	1	105	264	370	1	160
Hopkins	0	118	308	426	0	149
Hutchinson	0	89	222	311	0	114
International Falls	0	35	70	105	0	65
Inver Grove Heights	6	124	244	374	6	184
Lake Elmo	0	38	83	121	0	59
Lakeville	1	152	240	393	1	214
Lino Lakes	2	48	125	175	3	81
Litchfield	0	24	69	93	0	35
Little Canada	0	97	292	389	0	126
Little Falls	1	34	145	180	1	46
Mankato	1	231	735	967	1	313
Maple Grove	7	129	327	463	8	176
Maplewood	2	269	637	908	2	377
Marshall	0	55	79	134	0	76
Mendota Heights	2	50	135	187	2	70
Minneapolis	33	4,370	10,461	14,864	37	5,892
Minnetonka	0	321	650	971	0	443
Montevideo	0	30	66	963	0	50
Moorhead	1	169	667	837	1	235
Morris	0	20	83	103	0	29
Mound	0	34	78	112	0	48
Mounds View	0	69	106	175	0	114
New Brighton	0	100	262	362	0	139
New Hope	0	93	198	291	0	132
New Ulm	2	96	204	302	2	125
Northfield	0	58	139	197	0	83
North Mankato	1	37	101	139	1	51
North St. Paul	0	60	175	235	0	85
Oakdale	2	51	140	193	2	76
Orono	2	50	138	190	2	66
Owatonna	0	94	288	382	0	131
Plymouth	2	267	547	816	3	365
Prior Lake	3	62	87	152	3	100
Ramsey	0	68	89	157	0	116
Red Wing	4	113	292	409	4	153
Redwood Falls	0	15	43	58	0	22
Richfield	2	323	831	1,156	2	459
Robbinsdale	0	97	231	328	0	145
Rochester	4	422	1,211	1,637	4	553

* Cities of at least 5,000 estimated population in 1987.

TABLE 1.26 CONT'D

1988 CRASHES BY CITY*

City	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes	Number Killed	Number Injured
Rosemount	3	61	136	200	3	95
Roseville	1	256	748	1,005	1	359
St. Anthony	0	33	62	95	0	43
St. Cloud	2	515	1,284	1,801	2	727
St. Louis Park	1	327	855	1,183	1	441
St. Paul	15	2,559	7,795	10,369	15	3,361
St. Peter	1	29	102	132	1	47
Sauk Rapids	0	37	90	127	0	46
Savage	1	66	194	261	1	92
Shakopee	2	114	309	425	3	152
Shoreview	0	103	216	319	0	156
South St. Paul	0	123	309	432	0	146
Spring Lake Park	1	43	109	153	2	62
Stillwater	0	70	245	315	0	92
Thief River Falls	0	75	98	173	0	98
Vadnais Heights	0	80	204	284	0	108
Virginia	0	60	169	229	0	95
Waseca	0	37	102	139	0	47
West St. Paul	0	129	265	394	0	176
White Bear Lake	0	163	368	531	0	231
Willmar	3	131	297	431	3	209
Winona	1	191	512	704	1	267
Woodbury	1	104	211	316	1	182
Worthington	0	63	184	247	0	86

* Cities of at least 5,000 estimated population in 1987.

TABLE 1.27

1988 CRASHES, INJURIES AND FATALITIES BY MONTH

	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	29	2,673	8,599	11,301	32	3,891
February	26	2,056	6,238	8,320	27	2,925
March	33	1,850	4,480	6,363	39	2,654
April	40	2,141	4,384	6,565	42	3,047
May	56	2,607	4,987	7,650	64	3,726
June	47	2,808	5,004	7,859	53	4,109
July	69	2,809	4,857	7,735	77	4,148
August	65	2,849	4,923	7,837	73	4,061
September	50	2,753	5,354	8,157	55	3,909
October	51	2,671	6,065	8,787	60	3,907
November	38	2,779	8,165	10,982	45	3,984
December	41	2,747	7,750	10,538	48	4,054
Total	545	30,743	70,806	102,094	615	44,415

FIGURE 1.06

1988 Fatal Crashes vs. Total Crashes by Time of Day

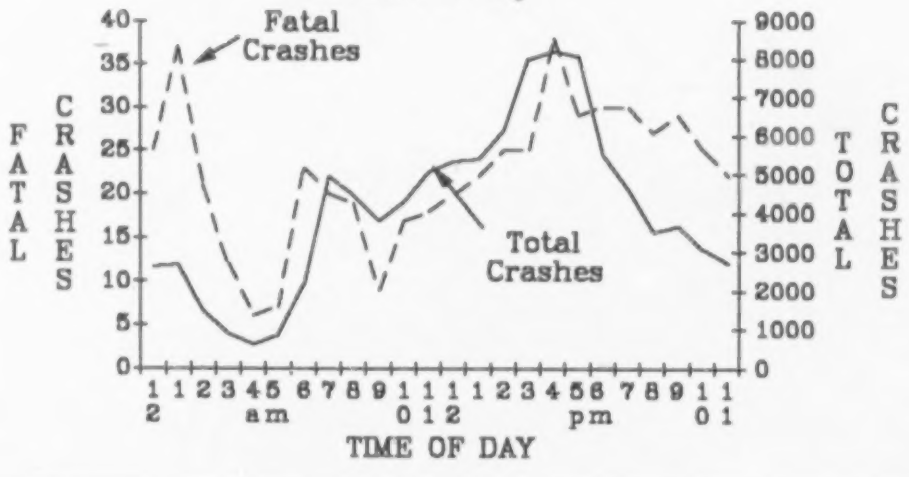


TABLE 1.28

1988 CRASHES BY TIME OF DAY AND DAY OF WEEK

Hour Beginning	Total Crashes	Fatal Crashes	Monday All	Monday Fatal	Tuesday All	Tuesday Fatal	Wednesday All	Wednesday Fatal	Thursday All	Thursday Fatal	Friday All	Friday Fatal	Saturday All	Saturday Fatal	Sunday All	Sunday Fatal
Midnight	2,605	25	272	4	297	1	234	4	279	2	360	2	601	6	562	6
1:00	2,664	37	140	1	169	1	209	5	263	3	352	4	776	15	755	8
2:00	1,468	21	71	1	79	0	114	3	137	2	165	4	447	3	455	8
3:00	898	12	52	0	59	1	80	1	77	2	99	2	255	2	276	4
4:00	628	6	47	1	55	1	62	0	56	1	76	0	182	2	150	1
5:00	871	7	104	1	104	3	119	1	101	0	144	2	176	0	123	0
6:00	2,132	23	369	3	364	4	320	2	345	1	377	4	212	4	145	5
7:00	4,940	20	883	1	979	3	831	8	924	1	878	4	317	0	128	3
8:00	4,471	19	763	3	870	3	746	1	770	2	693	3	434	3	195	4
9:00	3,826	9	643	1	584	2	508	1	534	3	569	1	616	1	372	0
10:00	4,290	17	696	3	597	4	550	3	555	4	719	0	750	1	423	2
11:00	5,072	18	763	7	714	4	692	2	683	0	851	2	907	3	462	0
Noon	5,326	20	827	1	715	4	621	2	685	4	901	3	937	4	640	2
1:00	5,402	22	872	5	789	5	712	1	662	2	899	3	900	3	568	3
2:00	6,152	25	1,002	5	926	4	828	4	875	3	1,055	4	924	4	542	1
3:00	7,997	25	1,293	4	1,258	4	1,200	2	1,230	5	1,481	6	874	2	661	2
4:00	8,220	38	1,270	7	1,289	3	1,251	5	1,303	6	1,541	5	893	8	673	4
5:00	8,085	29	1,216	5	1,276	7	1,289	2	1,248	2	1,470	4	894	6	692	3
6:00	5,471	30	709	1	807	2	768	4	757	2	993	8	833	7	604	6
7:00	4,593	30	590	6	620	3	588	1	630	6	885	8	728	4	552	2
8:00	3,519	27	421	6	459	5	466	3	489	2	659	3	611	4	414	4
9:00	3,670	29	427	3	434	3	478	3	530	5	758	6	657	3	386	6
10:00	3,070	25	342	0	315	3	382	5	402	1	741	6	587	5	301	5
11:00	2,707	22	247	1	258	1	293	2	346	2	676	5	625	8	262	3
Unknown	4,017	9	558	0	495	0	511	1	581	3	722	2	669	1	481	2
Total	102,094	545	14,577	70	14,512	71	13,852	66	14,462	64	18,064	91	15,805	99	10,822	84

TABLE 1.29

HOLIDAY CRASH SUMMARY, 1984-1988

	Year	Hours*	Total Crashes	Fatal Crashes	Personal Injury Crashes	Fatalities	Injuries
Memorial Day	1984	78	696	7	246	7	383
(For 1988, the holiday	1985	78	715	5	281	5	395
period was 6 p.m. Fri.,	1986	78	855	9	285	11	421
May 27-midnight	1987	78	695	4	238	4	384
Mon., May 30)	1988	78	691	8	243	8	369
July 4th	1984	30	328	2	140	2	213
(For 1988 the holiday	1985	30	353	5	136	5	211
period was 6 pm Fri.,	1986	78	751	4	278	5	469
July 1-midnight	1987	78	834	6	319	7	500
Mon., July 4)	1988	78	717	8	282	8	458
Labor Day	1984	78	748	5	274	5	451
(For 1988, the holiday	1985	78	814	6	279	7	419
period was 6 p.m. Fri.,	1986	78	800	8	280	8	446
Sep. 2-midnight	1987	78	711	5	258	5	406
Mon., Sept. 5)	1988	78	764	9	271	12	416
Thanksgiving	1984	102	1,491	9	440	12	667
(For 1988, the holiday	1985	102	2,054	8	461	8	461
period was 6 p.m. Wed.,	1986	102	838	13	192	15	323
Nov. 23-midnight	1987	102	1,522	7	441	10	690
Sun., Nov. 27)	1988	102	1,580	8	386	8	595
Christmas	1984	30	174	1	52	1	78
(For 1988, the holiday	1985	30	178	0	45	0	66
period was 6 p.m. Fri.,	1986	30	130	3	35	3	48
Dec. 23-midnight	1987	78	648	2	164	2	260
Mon., Dec. 26)	1988	78	1,052	1	247	1	406
New Year's							
(For 1988/9, the	1984/5	30	446	1	112	1	169
holiday period was	1985/6	30	249	3	70	3	112
6 p.m. Fri., Dec. 30,	1986/7	30	199	0	56	0	84
1988-midnight Mon.,	1987/8	78	744	5	208	6	355
Jan. 2, 1989)	1988/9	78	823	4	219	4	335

* The number of hours for a holiday period varies depending on what day of the week the holiday falls.

ALCOHOL-RELATED CRASHES

Since 1971, the percentage of dead drivers who had been drinking has gradually declined; this decline continued in 1988. Although there were more drivers killed, the percentage of those that had been drinking decreased 4% from 1987 and 8% from the previous five year average. The percentage of those at or above the legal limit of intoxication decreased by 12% from 1987 and 11% from the previous five year average.

There were 361 drivers killed and 313, or 87%, of them were tested for blood alcohol concentration. Of this group, 150 (48%) had been drinking and 118 (38%) were drunk (that is, at or above the .10% limit for alcohol concentration).

In September of 1986 the drinking age was raised from 19 to 21 but the law was phased in. Persons born on or before September 1, 1967 were able to drink legally even though they were under the age of 21; 1988 was the last year in which anyone under the age of 21 could legally drink.

DWI arrests decreased 5% from 34,664 in 1987 to 32,827 in 1988. This represents a 9% decrease from the preceding four year average. Eighty-four percent of those arrested were male, 16% female. One-third of those arrested were under the age of 25, another 24% were between 25 and 29. (Tables 2.02, 2.03)

* Of the 277 fatalities from alcohol-related crashes, 60% were between the ages of 15 and 29. Fifty-nine percent of those injured in alcohol-related crashes were also in this age group. Of the 615 traffic fatalities in 1988, 277 or 45% were alcohol-related. Fifteen percent of the injuries and 5% of the property damage only crashes were also alcohol-related. (Tables 2.04 and 2.05)

* Alcohol was involved in 55% of fatal overturns and 48% of the fatal collisions with a fixed object. (Table 2.06)

* Since 1982, the percent of dead drivers who had been drinking but were under the legal drinking age has steadily increased. At least part of this increase can probably be attributed to the change in the legal drinking age in 1986. Males made up 87% of the dead drivers who had been drinking and 85% of those who were legally drunk. This is not markedly different from previous years. (Tables 2.09, 2.10)

* The age group 16-30 made up 54% of the dead drivers who were tested for alcohol but were 67% of those who tested positive and 68% of those who were legally drunk. (Table 2.11)

* Although more drivers were killed on trunk highways, more of the drivers killed on township roads had been drinking. Fifty-four percent of those killed on trunk highways had been drinking compared with 73% of those killed on township roads (based on dead drivers tested). Of the drivers who died between midnight and 3:00 AM, 87% had been drinking and 73% were over the legal limit of intoxication. The hour between 1:00 and 2:00 AM had the most alcohol-related crashes for any hour of the day. Saturday was the day of the week with the most alcohol-related crashes (26%). Sunday was second with 19%. (Tables 2.13, 2.14 and 2.15, and Figures 2.01 and 2.02)

TABLE 2.01

DRINKING DRIVER SUMMARY, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Drunken Driving Arrests	18,092	22,788	27,034	28,048	32,155	36,638	35,383	36,390	34,664	32,827
Alcohol-Related Driver License Revocations Processed*	24,966	30,481	32,043	36,024	41,311	43,502	40,807	42,586	40,899	37,530
Estimated Alcohol Incidents that Led to Revocation**								39,311	37,710	34,270
Administrative Revocations For Refusing Test	3,427	3,863	4,427	8,456	11,155	11,413	9,219	8,468	8,336	7,907
Drivers Killed	523	519	437	321	345	383	372	347	297	361
Tested (died within 4 hours)	63%	65%	66%	72%	75%	83%	79%	81%	89%	87%
Positive (had been drinking)	58%	69%	62%	54%	56%	58%	47%	49%	50%	48%
Drunk (.10 or higher)	45%	58%	52%	48%	45%	47%	37%	41%	43%	38%

* Total alcohol revocations include certain multiple offenders who are revoked twice, under separate statutes, and those who have their Minnesota driver's license revoked because of an arrest outside of Minnesota.

** Estimated number of times an incident led to license revocation (these figures are not available prior to 1986).

TABLE 2.02

DWI ARRESTS BY AGE, 1984 - 1988

Age	1984	1985	1986	1987	1988
Under 15	6	8	8	8	6
15	21	24	27	13	15
16	185	171	254	208	160
17	500	446	546	485	503
18	1,342	1,109	1,151	1,084	1,038
19	2,166	1,864	1,813	1,363	1,229
20	2,370	2,035	2,002	1,709	1,291
21	2,377	2,053	2,070	1,830	1,608
22	2,269	2,170	2,115	1,862	1,662
23	2,202	2,024	2,040	2,019	1,646
24	2,002	2,007	2,006	1,925	1,726
25 - 29	7,511	7,618	8,295	8,146	7,920
30 - 34	4,720	4,933	5,002	5,110	5,146
35 - 39	3,013	3,200	3,316	3,356	3,265
40 - 44	2,078	2,062	2,098	2,087	2,101
45 - 49	1,394	1,292	1,274	1,289	1,360
50 - 54	916	911	857	834	786
55 - 59	704	686	631	584	556
60 - 64	443	395	397	359	406
65 & Over	419	375	448	393	403
TOTAL	36,638	35,383	36,390	34,664	32,827

TABLE 2.03

DWI ARRESTS BY SEX, 1984 - 1988

Age	1984	1985	1986	1987	1988
Male	31,327	30,135	30,836	29,266	27,686
Female	5,311	5,248	5,554	5,398	5,141

TABLE 2.04

AGE OF PERSONS KILLED AND INJURED IN 1988 ALCOHOL-RELATED CRASHES

Age	Killed*	Injured**
0 - 4	2	55
5 - 9	4	81
10 - 14	5	92
15 - 19	49	1,263
20 - 24	67	1,531
25 - 29	49	1,033
30 - 34	32	688
35 - 39	19	434
40 - 44	8	238
45 - 49	7	173
50 - 54	10	129
55 - 59	8	77
60 - 64	4	77
65 - 69	5	51
70 - 74	4	40
75 & Older	4	43
Not Stated	0	526
Total	277***	6,531

* Includes alcohol test information as well as officer's perception of alcohol noted on accident report.
** Includes only police officer's perception of alcohol noted on accident report.
*** Twenty-four of the total 277 alcohol related fatalities were pedestrians or bicyclists who had been drinking. In three of these twenty-four cases, the motor vehicle driver had also been drinking.

TABLE 2.05

PERCENT OF DEATHS, INJURIES, AND PROPERTY DAMAGE CRASHES CODED AS ALCOHOL-RELATED, 1985 - 1988

	Minnesota				United States			
	1985	1986	1987	1988	1985	1986	1987	1988
Deaths	43%	46%	42%	45%	51%*	52%*	51%*	NA
Injuries	16%	17%	17%	15%	15%**	14%**	NA	NA
Property Damage Crashes	6%	7%	7%	5%	NA	NA	NA	NA

* Fatal Accident Reporting System (FARS) data.
** National Accident Sampling System (NASS) data.

NA: Not Available.

FIGURE 2.01

Alcohol-Related Crashes
by Time of Day
1988

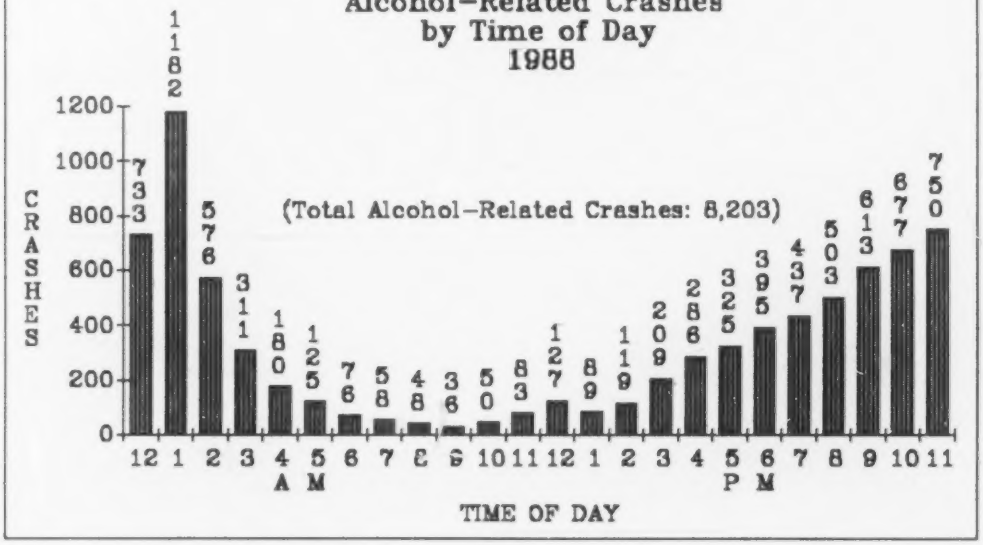


FIGURE 2.02

Alcohol-Related Crashes
by Day of Week
1988

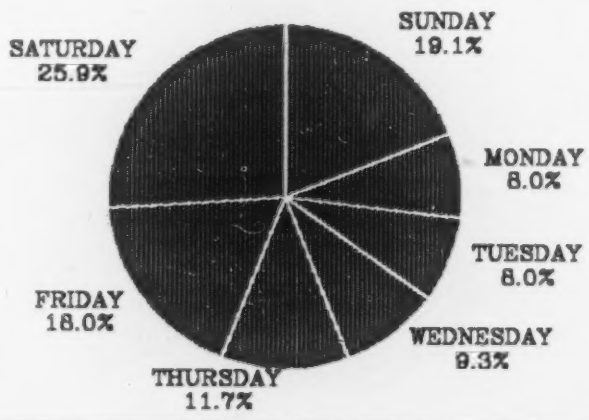


TABLE 2.06

ALCOHOL-RELATED FATAL CRASHES BY FIRST HARMFUL EVENT, 1988

	Alcohol-Related Fatal Crashes	Total Fatal Crashes
Collision with:		
Another Motor Vehicle	53 (21%)	251 (100%)
Parked Motor Vehicle	0	3 (100%)
Railroad Train	0	9 (100%)
Bicycle	4 (25%)	16 (100%)
Pedestrian	19 (30%)	63 (100%)
Animal	0	4 (100%)
Fixed Object	43 (48%)	90 (100%)
Other Object	1 (25%)	4 (100%)
Non-Collision:		
Overturn	50 (55%)	91 (100%)
Fire/Explosion	1 (50%)	2 (100%)
Submersion	0	1 (100%)
Other	4 (36%)	11 (100%)
Unknown	1 (100%)	1 (100%)
Total	175 (32%)	545 (100%)

* "Alcohol-related" defined by officer's perception as noted on accident report.

TABLE 2.07

1988 FATALITIES' LEVEL OF INTOXICATION BY TRAFFIC ROLE

Fatality Type	Total Killed	Total Tested	Total Drinking (.01 or more)	Total Drunk (.10 or more)
Car or Truck Driver	299	262	120	98
Car or Truck Passenger	156	58	28	19
Motorcycle Driver	52	45	25	17
Motorcycle Passenger	6	4	3	1
Pedestrian	69	47	22	20
Bicyclist	16	8	2	1
Moped Driver	2	1	1	1
All-Terrain Vehicle Driver	1	1	0	0
Other Driver	7	4	4	2
Other Passenger	3	1	0	0
Other/Unknown	4	3	3	3
Total	615	434	208	162

FIGURE 2.03

Alcohol-Related Driver Fatalities
1979 - 1988

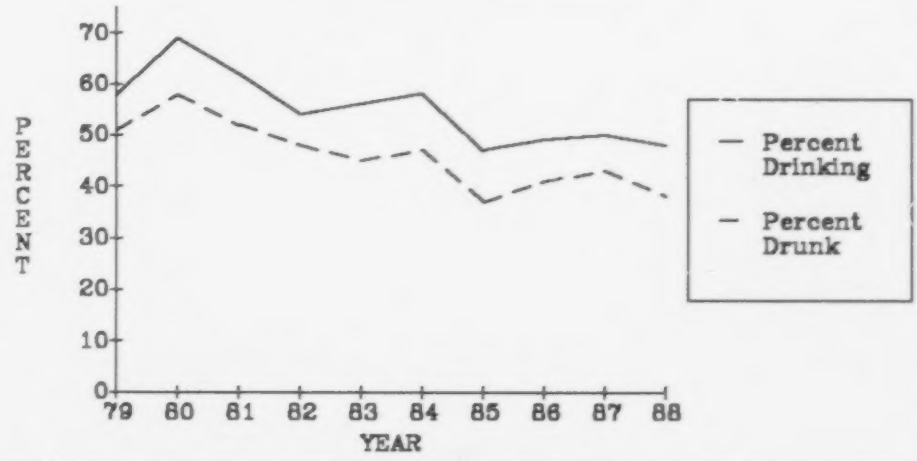


TABLE 2.08

DRIVERS KILLED WHO HAD BEEN DRINKING, 1979 - 1988

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1979	523	329	190 (58%)	168 (51%)
1980	519	337	232 (69%)	195 (58%)
1981	437	288	178 (62%)	150 (52%)
1982	321	232	126 (54%)	112 (48%)
1983	345	258	145 (56%)	117 (45%)
1984	383	318	185 (58%)	149 (47%)
1985	372	295	139 (47%)	108 (37%)
1986	347	281	138 (49%)	114 (41%)
1987	297	265	133 (50%)	115 (43%)
1988	361	313	150 (48%)	118 (38%)

* Percentages are based on those tested.

TABLE 2.09

DRIVERS KILLED WHO TESTED .01 OR HIGHER, 1979 - 1988

	Male	Female	Total	Occurred Between Midnight - 3 am	Under Legal Age
1979	169	21	190	57 (30%)	27 (14%)
1980	211	21	232	68 (29%)	23 (10%)
1981	162	16	178	61 (34%)	17 (10%)
1982	116	10	126	41 (33%)	9 (7%)
1983	129	16	145	38 (26%)	13 (9%)
1984	163	22	185	63 (34%)	17 (9%)
1985	116	23	139	60 (43%)	14 (10%)
1986	117	21	138	50 (36%)	16 (12%) *
1987	112	21	133	34 (26%)	22 (17%)
1988	131	19	150	32 (21%)	34 (23%)

* On September 1, 1986, the drinking age was raised from 19 to 21.

TABLE 2.10

DRIVERS KILLED WHO TESTED .10 OR HIGHER, 1979 - 1988

	Male	Female	Total	Occurred Between Midnight - 3 am	Under Legal Age
1979	149	19	168	68 (40%)	19 (11%)
1980	179	16	195	68 (35%)	17 (9%)
1981	138	12	150	81 (54%)	15 (10%)
1982	102	10	112	41 (37%)	7 (6%)
1983	105	12	117	38 (32%)	8 (7%)
1984	132	17	149	50 (34%)	12 (8%)
1985	90	18	108	49 (45%)	6 (6%)
1986	100	14	114	42 (37%)	12 (11%) *
1987	98	17	115	33 (29%)	13 (11%)
1988	100	18	118	27 (23%)	22 (19%)

* On September 1, 1986, the drinking age was raised from 19 to 21.

TABLE 2.11

1988 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

					Blood Alcohol Concentration				
Age	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	.01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
15 & Below	3	1	0	0	0	0	0	0	0
16	7	5	2	1	0	1	1	0	0
17	11	11	5	2	2	1	0	1	1
18	18	16	10	7	0	3	4	3	0
19	19	18	12	10	0	2	4	6	0
20	19	18	6	3	2	1	1	2	0
15 & Below	3	1	0	0	0	0	0	0	0
16 - 20	74	68	35 (51%)	23 (34%)	4	8	10	12	1
21 - 25	62	56	37 (66%)	31 (55%)	3	3	8	20	3
26 - 30	50	46	29 (63%)	26 (57%)	1	2	4	19	3
31 - 35	30	27	15 (56%)	14 (52%)	0	1	2	7	5
36 - 40	26	22	12 (55%)	10 (45%)	1	1	2	7	1
41 - 45	13	10	2 (20%)	2 (20%)	0	0	0	2	0
46 - 50	24	24	6 (25%)	5 (21%)	0	1	0	4	1
51 - 55	12	8	4 (50%)	1 (13%)	1	2	0	1	0
56 - 60	13	11	3 (27%)	2 (18%)	0	1	0	0	2
61 - 65	8	6	2 (33%)	2 (33%)	0	0	0	1	1
66 & Above	46	34	5 (15%)	2 (6%)	2	1	1	0	1
Unknown	0	0	0	0	0	0	0	0	0
Total	361	313	150 (48%)	118 (38%)	12	20	27	73	18

* Percentages are based on number of drivers tested.

FIGURE 2.04

Percent of Drivers Killed in an Age Group Who Had Been Drinking 1988

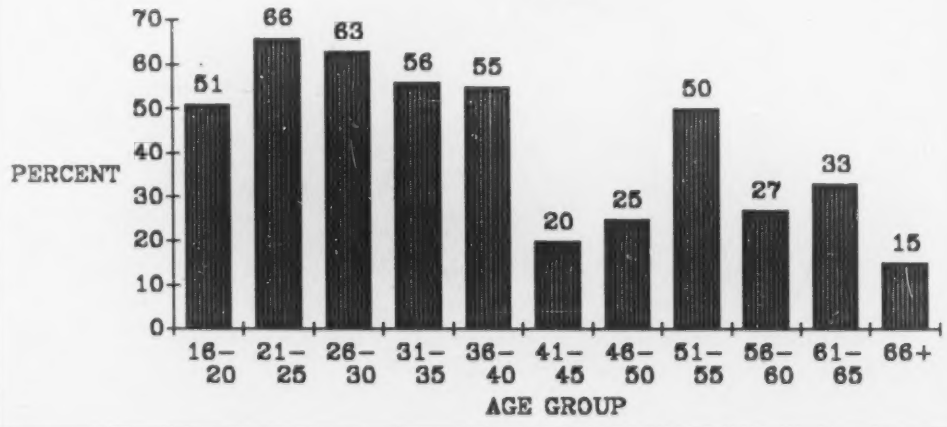


TABLE 2.12

1988 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY MONTH

Month	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
January	19	17	8 (47%)	7 (41%)	0	1	0	7	0
February	15	15	1 (7%)	0 (0%)	0	1	0	0	0
March	25	19	6 (32%)	4 (21%)	1	1	1	3	0
April	26	25	13 (52%)	10 (40%)	1	2	2	7	1
May	39	37	17 (46%)	15 (41%)	1	1	2	10	3
June	28	21	12 (57%)	9 (43%)	0	3	0	9	0
July	56	44	26 (59%)	20 (45%)	3	3	6	10	4
August	47	41	22 (54%)	16 (39%)	2	4	6	6	4
September	31	27	14 (52%)	12 (44%)	0	2	5	5	2
October	30	30	20 (67%)	18 (60%)	2	0	3	12	3
November	20	16	6 (38%)	3 (19%)	1	2	0	3	0
December	25	21	5 (24%)	4 (19%)	1	0	2	1	1
Total	361	313	150 (48%)	118 (38%)	12	20	27	73	18

* Percentages are based on number of drivers tested.

TABLE 2.13

1988 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY ROAD TYPE

Road Type	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Urban Interstate	11	11	3 (27%)	3 (27%)	0	0	1	1	1
Rural Interstate	15	13	7 (54%)	7 (54%)	0	0	1	4	2
Trunk Highway	156	137	59 (43%)	42 (31%)	8	9	12	25	5
County Road	137	116	60 (52%)	48 (41%)	4	8	9	33	6
Township Road	17	15	11 (73%)	8 (53%)	0	3	2	4	2
Local Street	25	21	10 (48%)	10 (48%)	0	0	2	6	2
Total	361	313	150 (48%)	118 (38%)	12	20	27	73	18

* Percentages are based on the number of drivers tested.

TABLE 2.14

1988 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY TIME OF DAY

Time of Day	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Midnight - 2:59 AM	59	55	48 (87%)	40 (73%)	4	4	11	26	3
3:00 AM - 5:59 AM	18	17	13 (76%)	11 (65%)	0	2	4	6	1
6:00 AM - 8:59 AM	49	39	8 (21%)	6 (15%)	1	1	2	4	0
9:00 AM - 11:59 AM	27	21	2 (10%)	1 (5%)	0	1	1	0	0
Noon - 2:59 PM	43	37	6 (16%)	4 (11%)	1	1	0	2	2
3:00 PM - 5:59 PM	60	49	11 (22%)	6 (12%)	2	3	0	6	0
6:00 PM - 8:59 PM	47	45	28 (62%)	23 (51%)	1	4	4	12	7
9:00 PM - 11:59 PM	50	44	29 (66%)	23 (52%)	3	3	4	15	4
Unknown	8	6	5 (83%)	4 (67%)	0	1	1	2	1
Total	361	313	150 (48%)	118 (38%)	12	20	27	73	18

* Percentages are based on the number of drivers tested

TABLE 2.15

1988 DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY DAY OF WEEK

Day of Week	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
Sunday	63	58	38 (66%)	33 (57%)	4	1	10	18	5
Monday	50	44	14 (32%)	12 (27%)	0	2	1	9	2
Tuesday	43	38	12 (32%)	8 (21%)	1	3	3	4	1
Wednesday	48	44	20 (45%)	15 (34%)	3	2	2	10	3
Thursday	40	28	12 (43%)	9 (32%)	1	2	2	6	1
Friday	53	47	20 (43%)	18 (38%)	1	1	5	9	4
Saturday	64	54	34 (63%)	23 (43%)	2	9	4	17	2
Total	361	313	150 (48%)	118 (38%)	12	20	27	73	18

* Percentages are based on number of drivers tested.

RESTRAINT USE BY VEHICLE OCCUPANTS IN 1988 CRASHES

Studies show that in the event of a traffic crash, use of seat belts reduces the risk of fatal injury by forty to fifty percent. Restraint use is thus an important traffic safety priority.

The Minnesota Child Passenger Protection Act was passed in 1981, and took effect January 1, 1982. As amended in 1983 and 1987, it requires that children three years old and younger be properly restrained in a child safety seat. The state mandatory seat belt law, passed in 1986, requires that all front seat occupants be restrained.Children aged four through ten must also be restrained, no matter where they are in the vehicle. A 1988 amendment, effective May 1, added a $10 fine for non-compliance.

* Observational surveys of front seat occupants show that statewide restraint use increased about 12 percentage points (to about 32%) after the 1986 law took effect. It remained approximately constant through 1987 and then increased to 47% in the August 1988 survey, after the fine was added. Observed restraint use varied little by time of day (rush hour versus non-rush hour periods), or by type of roadway (major versus local roads), or by weather condition (clear versus other), but tended to be somewhat higher in the metro area than the non-metro area. Restraint use also tended to be much more likely at higher speeds than lower speeds. (Table 3.06)

In Minnesota, information is collected on restraint use by fatally and non-fatally injured occupants, where occupants are defined as people in vehicles normally equipped with seat belts. (Thus, persons on motorcycles or in school buses, or in other vehicles without seat belts, are excluded.) Information is not collected on uninjured occupants. Even for injured occupants, restraint use is often unknown or unreported. It it is commonly believed, however, that the majority of these persons are unrestrained.

* There were 459 occupants killed and 38,852 injured in crashes in 1988. Among the 39,311 persons killed or injured, restraint use was relatively high for children under four: 61% were known to be restrained. Comparing ten-year age groups shows that restraint use was lowest among 11 to 20 year olds. It increased for successive age groups, to a high of 56% for 61 to 70 years olds, and then dropped slightly among those over age 70. (Tables 3.01, 3.02, Figure 3.01)

* Restraint use was higher on interstates, where about 45% of the killed or injured occupants were restrained, than it was on other types of roadways. (Table 3.04) Also, it was relatively high in the metro area (about 42% restrained) and southeast part of the state (about 40% restrained) and relatively low in the Northwest and West Central parts of the state (about 28 and 31 percent, respectively, restrained). (Table 3.05)

TABLE 3.01

1988 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY AGE AND SEVERITY OF INJURY

Age Group	Fatal Injuries	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries
0 - 4	8	49	325	474	848
5 - 9	9	80	435	565	1,080
10 - 14	9	97	379	543	1,019
15 - 19	78	843	2,986	3,375	7,204
20 - 24	83	713	2,118	2,905	5,736
25 - 29	50	489	1,532	2,389	4,410
30 - 34	33	353	1,114	1,913	3,380
35 - 39	27	288	804	1,510	2,602
40 - 44	19	219	624	1,188	2,031
45 - 49	23	180	424	910	1,514
50 - 54	17	129	364	674	1,167
55 - 59	12	100	313	567	980
60 - 64	14	112	301	549	962
65 - 69	16	102	258	437	797
70 - 74	19	91	232	364	687
75 - 79	14	64	193	277	534
80 - 84	11	48	136	152	336
85 & Over	10	39	57	84	180
Not Stated	7	156	681	2,548	3,385
Total	459	4,152	13,276	21,424	38,852

FIGURE 3.01

1988 Restraint Use of Motor Vehicle Occupants Killed or Injured, by Age Group

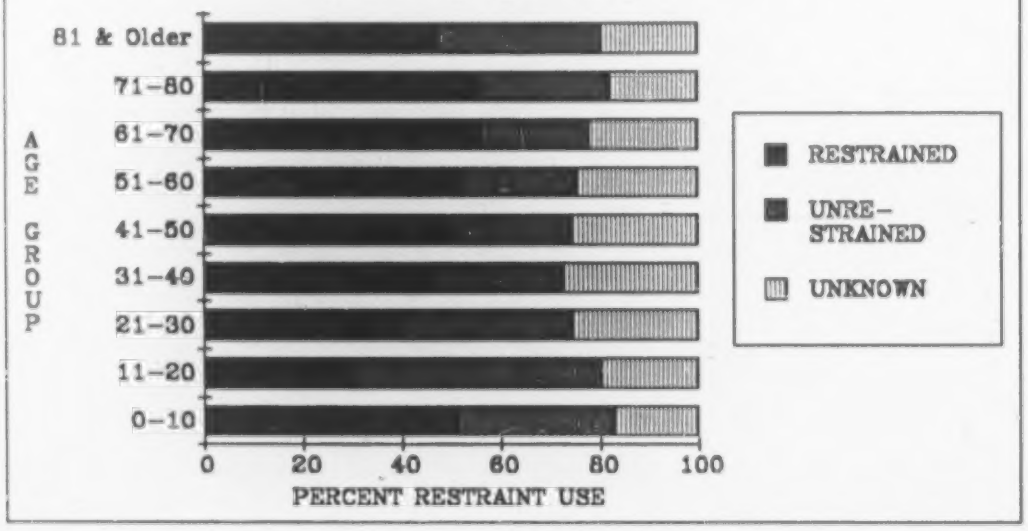


TABLE 3.02

RESTRAINT USE OF VEHICLE OCCUPANTS KILLED AND INJURED IN 1988 BY AGE AND INJURY SEVERITY

Age Group	Restraint Use	Persons Killed		Persons Injured by Severity Level							
				Severe		Moderate		Minor		Total	
		#	%	#	%	#	%	#	%	#	%
0 - 3	Restrained	1	16.7	13	40.6	133	57.8	219	65.8	365	61.3
Years	Unrestrained	3	50.0	14	43.8	59	25.7.7	65	19.5	138	23.2
	Unknown	2	33.3	5	15.6	38	16.5	49	14.7	92	15.5
	Total	6	100.0	32	100.0	230	100.0	333	100.0	595	100.0
0 - 10	Restrained	4	23.5	54	39.1	403	48.7	611	53.7	1,068	50.8
Years	Unrestrained	9	52.9	56	40.6	300	36.2	317	27.9	673	32.0
	Unknown	4	23.5	28	20.3	125	15.1	210	18.5	363	17.3
	subtotal	17	100.0	138	100.0	828	100.0	1,138	100.0	2,104	100.0
11 - 20	Restrained	12	11.3	193	17.6	1,017	26.9	1,571	35.6	2,781	29.9
Years	Unrestrained	78	73.6	692	63.0	2,117	56.0	1,835	41.6	4,644	50.0
	Unknown	16	15.1	214	19.5	647	17.1	1,006	22.8	1,867	20.1
	subtotal	106	100.0	1,099	100.0	3,781	100.0	4,412	100.0	9,292	100.0
21 - 30	Restrained	23	18.9	290	26.1	1,235	36.0	2,244	43.9	3,769	39.1
Years	Unrestrained	83	68.0	590	53.1	1,509	44.0	1,265	24.8	3,364	34.9
	Unknown	16	13.1	232	20.9	683	19.9	1,597	31.3	2,512	26.0
	subtotal	122	100.0	1,112	100.0	3,427	100.0	5,106	100.0	9,645	100.0
31 - 40	Restrained	11	20.4	234	38.0	775	43.2	1,604	48.8	2,613	45.8
Years	Unrestrained	34	63.0	240	39.0	623	34.7	648	19.7	1,511	26.5
	Unknown	9	16.7	142	23.1	398	22.2	1,037	31.5	1,577	27.7
	subtotal	54	100.0	616	100.0	1,796	100.0	3,289	100.0	5,701	100.0
41 - 50	Restrained	9	20.0	153	40.9	475	48.4	1,049	52.3	1,677	49.9
Years	Unrestrained	34	75.6	153	40.9	268	27.3	381	19.0	802	23.9
	Unknown	2	4.4	68	18.2	238	24.3	576	28.7	882	26.2
	subtotal	45	100.0	374	100.0	981	100.0	2,006	100.0	3,361	100.0
51 - 60	Restrained	10	34.5	101	44.9	345	51.7	642	53.9	1,088	52.2
Years	Unrestrained	13	44.8	88	39.1	200	30.0	188	15.8	476	22.9
	Unknown	6	20.7	36	16.0	122	18.3	361	30.3	519	24.9
	subtotal	29	100.0	225	100.0	667	100.0	1,191	100.0	2,083	100.0
61 - 70	Restrained	9	32.1	102	49.3	308	56.0	540	57.6	950	56.1
Years	Unrestrained	14	50.0	69	33.3	130	23.6	162	17.3	361	21.3
	Unknown	5	17.9	36	17.4	112	20.4	235	25.1	383	22.6
	subtotal	28	100.0	207	100.0	550	100.0	937	100.0	1,694	100.0
71 &	Restrained	18	35.3	97	43.1	296	52.4	460	57.7	853	53.7
Older	Unrestrained	26	51.0	95	42.2	178	31.5	160	20.1	433	27.3
	Unknown	7	13.7	33	14.7	91	16.1	177	22.2	301	19.0
	subtotal	51	100.0	225	100.0	565	100.0	797	100.0	1,587	100.0
Age	Restrained	1	14.3	41	26.3	213	31.3	463	18.2	717	21.2
Not	Unrestrained	3	42.9	48	30.8	211	31.0	272	10.7	531	15.7
Stated	Unknown	3	42.9	67	42.9	257	37.7	1,813	71.2	2,137	63.1
	subtotal	7	100.0	156	100.0	681	100.0	2,548	100.0	3,385	100.0
All	Restrained	97	21.1	1,265	30.5	5,067	38.2	9,184	42.9	15,516	39.9
Ages	Unrestrained	294	64.1	2,031	48.9	5,536	41.7	5,228	24.4	12,795	32.9
	Unknown	68	14.8	856	20.6	2,673	20.1	7,012	32.7	10,541	27.1
	Total	459	100.0	4,152	100.0	13,276	100.0	21,424	100.0	38,852	100.0

TABLE 3.03

PERCENT RESTRAINT USE OF MOTOR VEHICLE OCCUPANTS INJURED OR KILLED,* BY INJURY SEVERITY AND YEAR, 1984-1988

	1984 Percent	1985 Percent	1986 Percent	1987 Percent	1988 Percent
Fatalities					
Restrained	5.8	8.8	9.2	17.7	21.1
Unrestrained	64.5	70.8	69.7	67.9	64.1
Unknown	29.7	20.4	21.1	14.4	14.8
Severe Injuries					
Restrained	5.9	8.4	16.9	22.0	30.5
Unrestrained	46.3	60.3	57.8	55.1	48.9
Unknown	47.8	31.3	25.4	22.9	20.6
Moderate Injuries					
Restrained	7.4	10.7	20.8	29.3	38.2
Unrestrained	44.8	58.8	53.4	48.4	41.7
Unknown	47.8	30.4	25.9	22.3	20.1
Minor Injuries					
Restrained	9.0	14.4	25.7	36.2	42.9
Unrestrained	34.7	45.6	38.9	32.2	24.4
Unknown	56.3	40.0	35.3	31.6	32.7
Total					
Restrained	8.1	12.5	22.7	31.9	39.7
Unrestrained	41.9	53.8	46.7	41.2	33.3
Unknown	50.0	33.7	30.6	26.9	27.0

* Includes child restraints and seat belts.

TABLE 3.04

1988 MOTOR VEHICLE OCCUPANTS INJURED OR KILLED, BY ROADWAY TYPE AND RESTRAINT USE

	Restrained		Unrestrained		Unknown		Total	
Roadway Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Interstate	1,195	44.5	762	28.4	728	27.1	2,685	100.0
Trunk Highway	6,121	42.8	4,674	32.7	3,520	24.6	14,315	100.1
County State-Aid Highway	4,441	39.1	3,797	33.5	3,113	27.4	11,351	100.0
County Road	423	35.0	521	43.2	263	21.8	1,207	100.0
Township Road	358	31.7	567	50.2	204	18.1	1,129	100.0
Local Street	3,049	35.8	2,717	31.9	2,746	32.3	8,512	100.0
Other Road	26	23.2	51	45.5	35	31.3	112	100.0
Total	15,613	39.7	13,089	33.3	10,609	27.0	39,311	100.0

TABLE 3.05

1988 MOTOR VEHICLE OCCUPANTS KILLED OR INJURED, BY REGION* AND RESTRAINT USE

Region	Percent Restrained	Percent Unrestrained	Percent Unknown	Number of People
Metropolitan	41.8	26.9	31.3	21,749
Central	39.5	39.6	20.8	4,901
Northeast	39.7	36.4	23.9	2,313
Northwest	28.1	46.6	25.4	1,293
South Central	37.1	43.6	19.2	1,700
Southeast	40.2	38.4	21.5	3,491
Southwest	34.5	48.1	17.4	2,261
West Central	30.8	42.4	26.9	1,603
Statewide	39.7	33.3	27.0	39,311

TABLE 3.06

PERCENT OF FRONT SEAT OCCUPANTS WEARING SEAT BELTS, BY DATE OF OBSERVATION SURVEY

	June 1986	August 1986	November 1986	August 1987	August 1988
Estimation Area					
Statewide	20	33	32	32	47
Metro	30	43	39	40	51
Outstate	15	26	24	28	45
Weather					
Clear	19	32	33	32	47
Other	23	36	19	41	48
Time					
Non-rush	20	34	32	33	47
Rush	21	31	30	30	47
Day of the Week					
Weekday	19	33	33	32	45
Weekend	21	33	29	33	52
Speed					
20 MPH	14	29	33	29	35
40 MPH	20	32	27	30	47
60 MPH	28	39	36	41	57
Road Class					
Major Roads	23	35	31	35	48
Local Roads	17	31	32	29	46

The seat belt law, which requires all front seat passengers and all passengers under the age of eleven to wear safety belts, became effective in Minnesota on August 1, 1986. The June 1986 observation study was conducted prior to the implementation of this law; all other studies were conducted after the law went into effect. The August 1988 survey was conducted after the amendment adding a $10.00 fine went into effect.

The usage rate is not a simple ratio of the number of persons observed belted to the total number of people observed. It is, instead, the ratio of estimated time on the road that front seat occupants are using safety belts to the total estimated time on the road for these occupants.

MOTORCYCLE CRASHES

The number of motorcycle registrations continued to decrease in 1988, but the number of licensed operators continued to increase. The number of motorcycle accidents continued to decrease, down 7% from 1987 and 23% from the average of the preceding five years. There were 1,969 crashes in 1988. The 1,817 injuries suffered by motorcyclists is a 23% decrease from the average of the previous five years.

Fatalities increased from 1987, which had the lowest number of fatalities since 1971. The 58 motorcyclist fatalities represent a 12% decrease from the previous five year average. The fatal crash rate per 100 motorcycle crashes rose 16% over the previous five year average while the rate for all vehicles combined remained constant. Motorcycle crashes were almost six times more likely to be fatal than the crashes of all vehicles combined. (Table 4.01)

* More than half of all motorcycle crashes involved collision with another motor vehicle. Overturns accounted for 21% of all motorcycle crashes. Of fatal crashes, 47% were collisions with another motor vehicle, 30% were collisions with fixed objects, and another 16% were overturns. Although the majority of motorcycle crashes occurred in urban areas, the majority of fatal crashes occurred in rural areas, under 5,000 population. (Tables 4.02 and 4.03)

* The month of July had the most accidents and the largest number of crashes at all levels of severity. Fifty-five percent of the fatalities and 57% of the injuries occurred in the summer months of June, July, and August. Of the days of the week, Friday, Saturday, and Sunday show a slight increase over the rest of the weekdays in the number of motorcycle crashes. The most crashes occurred between 5:00 and 6:00 PM while the most fatal crashes occurred later in the evening, 8:00 to 9:00 PM and 11:00 to midnight. (Tables 4.04 and 4.05 and Figure 4.01)

* Young males were again the main victim of motorcycle crashes. Males suffered 98% of the fatalities and 87% of the injuries. Males between the ages of 15 and 29 made up 69% of the fatalities and 56% of the injuries. (Table 4.06 and Figure 4.02)

* At least 71% of the motorcyclists killed and 55% of those injured were not wearing helmets at the time of their accident. Only 55% of the motorcycle operators involved in fatal crashes had a valid motorcycle endorsement on their driver's license and 5% had a valid motorcycle permit. (Tables 4.07 and 4.08)

* The top three contributing factors attributed to motorcycle operators were: Illegal/Unsafe Speed, Driver Inattention/Distraction, and Physical Impairment. The top three cited for other drivers in motorcycle crashes were: Failure to Yield the Right of Way, Driver Inattention/Distraction, and Improper Turn. (Table 4.11)

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total Accidents	2,872	3,308	3,063	2,518	2,811	2,768	2,748	2,318	2,121	1,969
Fatal Accidents	95	112	92	72	70	59	75	63	51	57
Personal Injury Accidents	2,391	2,728	2,516	2,115	2,377	2,302	2,238	1,891	1,692	1,628
Persons Killed:										
Motorcyclists	97	121	96	70	73	62	77	66	51	58
Non-Motorcyclists/Unknown	1	1	0	6	0	1	1	0	3	4
Persons Injured:										
Motorcyclists	2,833	3,359	2,874	2,381	2,678	2,590	2,500	2,152	1,853	1,817
Non-Motorcyclists/Unknown	71	34	196	189	191	207	204	142	145	126
Licensed Operators	201,075	222,330	238,926	246,134	252,808	256,836	272,317	282,087	288,424	293,347
Registered Motorcycles	156,552	157,815	166,151	159,345	155,502	153,851	151,449	141,261	134,590	128,956
Rates:										
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	3.3	3.4	3.0	2.9	2.5	2.2	2.7	2.7	2.4	2.9
Fatal Crashes Per 100 Crashes (All Vehicles)	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Motorcyclist Fatalities Per 10,000 Motorcycle Registrations	6.2	7.7	5.8	4.5	4.7	4.0	5.1	4.7	3.8	4.5
Motorcyclist Injuries Per 10,000 Motorcycle Registrations	181.0	212.8	173.0	149.4	172.2	165.5	165.1	152.3	137.7	140.9
Total Motorcycle Crashes Per 10,000 Motorcycle Registrations	183.5	209.6	184.4	158.0	180.8	179.9	181.4	164.1	157.6	152.7

1983 and 1984 injury figures include some all-terrain vehicles. Fatality figures do not.

TABLE 4.02

1988 MOTORCYCLE CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:				
Other Motor Vehicle	27	824	187	1,038
Parked Motor Vehicle	0	21	41	62
Bicycle	0	19	1	20
Pedestrian	2	15	0	17
Animal	0	68	8	76
Fixed Object	17	183	11	211
Other Object	0	27	4	31
Non-Collision:				
Overturn	9	379	22	410
Other/Unknown	2	92	10	104
Total	57	1,628	284	1,969

TABLE 4.03

1988 MOTORCYCLE CRASHES BY CITY POPULATION

Population of City or Township	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
100,000 and Over	8	322	90	420
50,000 - 99,999	2	80	8	90
25,000 - 49,999	7	282	53	342
10,000 - 24,999	2	246	34	282
5,000 - 9,999	5	121	26	152
2,500 - 4,999	1	56	9	66
1,000 - 2,499	1	31	9	41
Under 1,000	28	420	40	488
Unknown	3	70	15	88
Total	57	1,628	284	1,969

TABLE 4.04

1988 MOTORCYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	0	1	1	0	0
February	0	2	0	2	0	3
March	1	24	7	32	1	26
April	2	135	25	162	2	145
May	10	259	47	316	11	287
June	8	325	53	386	9	377
July	13	331	55	399	14	359
August	9	266	34	309	9	298
September	6	175	37	218	6	200
October	6	95	23	124	4	105
November	2	15	2	19	2	16
December	0	1	0	1	0	1
Total	57	1,628	284	1,969	58	1,817

FIGURE 4.01

1988 Fatal Motorcycle Crashes vs. Total Motorcycle Crashes by Time of Day

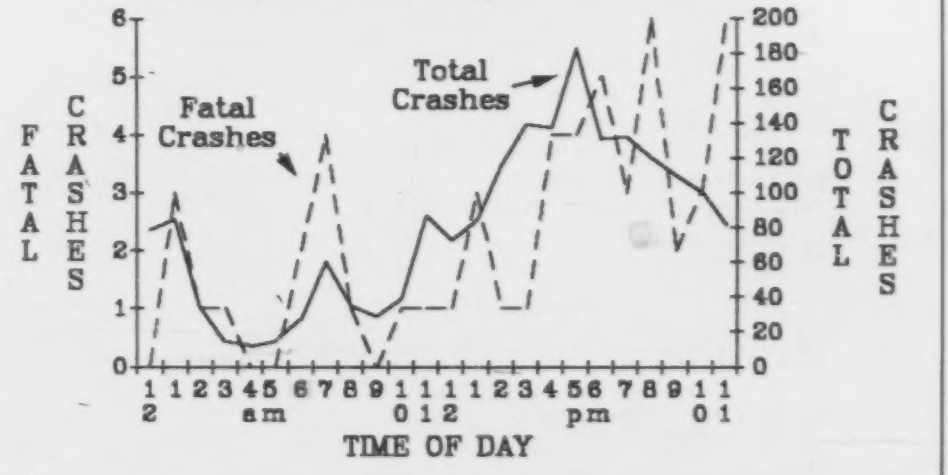


TABLE 4.05

1988 MOTORCYCLE CRASHES BY TIME AND DAY

Hour Beginning	Total Crashes	Fatal Crashes	Sunday All	Sunday Fatal	Monday All	Monday Fatal	Tuesday All	Tuesday Fatal	Wednesday All	Wednesday Fatal	Thursday All	Thursday Fatal	Friday All	Friday Fatal	Saturday All	Saturday Fatal
Midnight	79	0	22	0	6	0	13	0	5	0	6	0	11	0	16	0
1:00	85	3	23	0	3	0	5	0	6	1	10	0	12	0	26	2
2:00	34	1	6	0	4	0	1	0	4	1	4	0	1	0	14	0
3:00	14	1	4	0	0	0	1	0	2	0	3	1	0	0	4	0
4:00	12	0	3	0	0	0	2	0	0	0	2	0	1	0	4	0
5:00	15	0	6	0	0	0	1	0	2	0	2	0	3	0	1	0
6:00	27	2	1	0	4	0	5	1	3	0	6	1	6	0	2	0
7:00	60	4	1	0	9	0	13	1	15	3	12	0	7	0	3	0
8:00	35	1	4	1	5	0	6	0	5	0	8	0	4	0	3	0
9:00	29	0	2	0	6	0	5	0	2	0	2	0	9	0	3	0
10:00	39	1	11	0	3	0	1	0	1	0	4	1	9	0	10	0
11:00	87	1	17	0	11	1	8	0	10	0	11	0	10	0	20	0
Noon	73	1	16	0	8	0	8	0	8	1	12	0	12	0	9	0
1:00	84	3	13	1	12	1	12	0	7	0	5	1	13	0	22	0
2:00	116	1	20	0	14	0	15	1	12	0	18	0	17	0	20	0
3:00	139	1	19	1	22	0	18	0	17	0	19	0	27	0	17	0
4:00	137	4	17	1	20	0	17	1	17	0	24	1	24	0	18	1
5:00	182	4	28	1	20	1	30	1	30	0	23	0	24	0	27	1
6:00	131	5	21	2	15	0	14	0	16	1	18	0	23	2	24	0
7:00	132	3	23	0	21	3	21	0	12	0	20	0	9	0	26	0
8:00	120	6	26	1	12	1	11	1	13	0	15	0	20	1	23	2
9:00	110	2	14	2	10	0	14	0	10	0	14	0	30	0	18	0
10:00	101	3	12	1	14	0	15	1	15	1	10	0	17	0	18	0
11:00	82	6	15	0	8	0	13	1	7	0	7	0	11	0	21	5
Not Stated	46	4	8	2	5	0	6	0	8	0	5	1	7	1	7	0
Total	1,969	57	332	13	232	7	255	8	227	8	260	6	307	4	356	11

TABLE 4.06

MOTORCYCLISTS KILLED AND INJURED BY AGE AND SEX, 1988

	Killed			Severe Injury			Moderate Injury			Possible Injury			Total Injuries**		
Age Group	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	0	0	0	0	0	0	1	0	1	2	1	3	3	1	4
5 - 9	1	0	1	1	1	2	2	1	3	0	0	0	3	2	5
10 - 14	0	1	1	7	2	9	9	1	10	2	3	5	18	6	24
15 - 19	12	0	12	93	20	113	157	38	195	51	5	56	301	63	364
20 - 24	16	0	16	138	12	150	197	19	216	81	13	94	416	44	460
25 - 29	12	0	12	91	11	102	146	10	156	63	5	68	300	26	326
30 - 34	7	0	7	40	8	48	92	10	102	42	4	46	174	22	196
35 - 39	5	0	5	42	7	49	54	7	61	24	4	28	120	18	138
40 - 44	0	0	0	20	10	30	32	6	38	9	1	10	61	17	78
45 - 49	1	0	1	9	1	10	27	3	30	7	0	7	43	4	47
50 - 54	1	0	1	10	3	13	12	1	13	1	0	1	23	4	27
55 - 59	2	0	2	6	1	7	4	0	4	3	0	3	13	1	14
60 - 64	0	0	0	2	0	2	3	1	4	0	2	2	5	3	8
65 - 69	0	0	0	1	0	1	0	0	0	1	0	1	2	0	2
70 & over	0	0	0	0	0	0	4	0	4	1	0	1	5	0	5
Not Stated	0	0	0	8	2	10	20	11	31	61	10	78	89	23	119
Total	57	1	58	468	78	546	760	108	868	348	48	403	1,576	234	1,817

* In some cases, sex was not reported, and columns do not sum to total.
** Does not include fatalities.

FIGURE 4.02

1988 Motorcyclist Injuries and Fatalities by Age and Sex

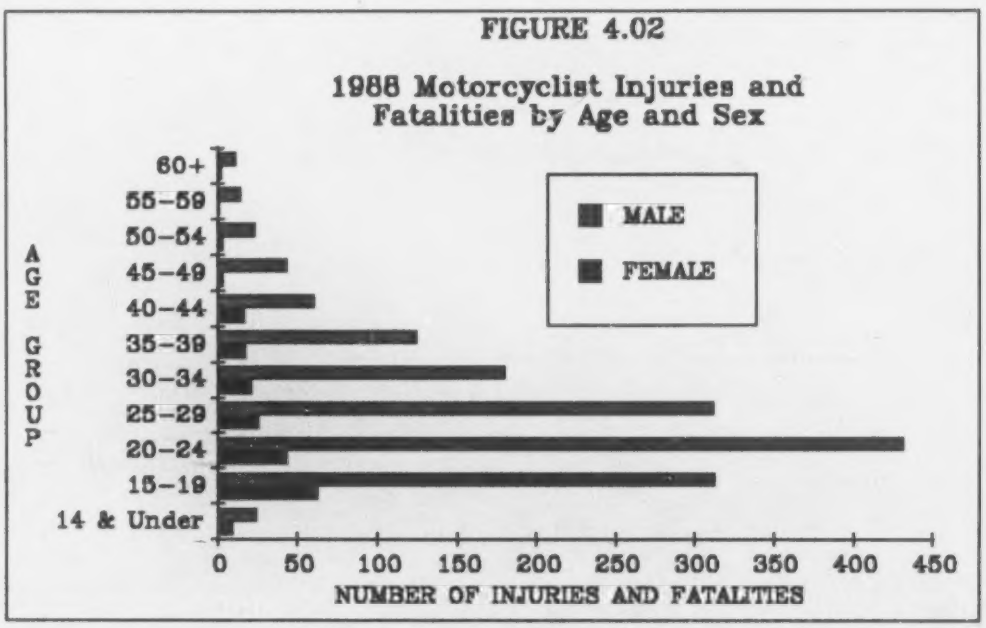


TABLE 4.07

HELMET USE BY MOTORCYCLISTS KILLED AND INJURED, 1984 - 1988

	Helmet Used		Helmet Not Used		Helmet Use Unknown		Total	
Fatalities								
1984	19	(31%)	32	(51%)	11	(18%)	62	(100%)
1985	16	(21%)	61	(79%)	0	(0%)	77	(100%)
1986	18	(27%)	42	(64%)	6	(9%)	66	(100%)
1987	16	(31%)	33	(65%)	2	(4%)	51	(100%)
1988	12	(21%)	41	(71%)	5	(9%)	58	(100%)
Injuries								
1984	686	(26%)	846	(33%)	1,058	(41%)	2,590	(100%)
1985	*		*		*		*	
1986	720	(33%)	1,096	(51%)	336	(16%)	2,152	(100%)
1987	*		*		*		*	
1988	506	(28%)	1,007	(55%)	304	(17%)	1,817	(100%)

*Data for these categories is unavailable for 1985 and 1987.

TABLE 4.08

ENDORSEMENT STATUS OF MOTORCYCLE OPERATORS INVOLVED IN FATAL CRASHES, 1979 - 1988

Year	Endorsement Valid* Number	Percent	Permit Only Number	Percent	Cancelled, Suspended, Revoked Number	Percent	No Endorsement Number	Percent	Total** For Year Number	Percent
1979	61	(64.2)	9	(9.5)	3	(3.2)	22	(23.1)	95	(100.0)
1980	74	(66.7)	6	(5.4)	4	(3.6)	27	(24.3)	111	(100.0)
1981	73	(80.2)	2	(2.2)	4	(4.4)	12	(13.2)	91	(100.0)
1982	53	(76.8)	2	(2.9)	2	(2.9)	12	(17.4)	69	(100.0)
1983	47	(68.1)	6	(8.7)	3	(4.3)	13	(18.8)	69	(100.0)
1984	50	(73.5)	1	(1.5)	3	(4.4)	14	(20.6)	68	(100.0)
1985	50	(64.9)	5	(6.5)	7	(9.1)	15	(19.5)	77	(100.0)
1986	41	(64.1)	1	(1.6)	7	(10.9)	15	(23.4)	64	(100.0)
1987	33	(64.7)	1	(2.0)	10	(19.6)	7	(13.7)	51	(100.0)
1988	32	(55.2)	3	(5.2)	9	(15.5)	13	(22.4)	58	(100.0)
Total	514	(68.3)	36	(4.8)	52	(6.9)	150	(19.9)	753	(100.0)

* A valid endorsement means that the driver's license has been "endorsed" to permit operation of a motorcycle.
** Rows may not add to total due to unknown status of motorcycle operator.

TABLE 4.09

ALCOHOL USE BY MOTORCYCLE DRIVERS, 1980 - 1988

Year	Killed	Tested	Drinking (.01 or more) Number	Drinking (.01 or more) Percent	Drunk (.10 or more) Number	Drunk (.10 or more) Percent
1980	107	57	37	(65%)	29	(51%)
1981	76	44	30	(68%)	25	(57%)
1982	55	39	23	(59%)	17	(44%)
1983	56	36	24	(67%)	20	(56%)
1984	57	45	32	(71%)	23	(51%)
1985	63	51	33	(65%)	25	(49%)
1986	56	46	30	(65%)	25	(54%)
1987	45	42	25	(60%)	22	(52%)
1988	52	45	25	(56%)	17	(38%)

*Percentages are based on those tested.

TABLE 4.10

1988 MOTORCYCLE DRIVER FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

Age	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)	Blood Alcohol Concentration .01-.04	.05-.09	.10-.14	.15-.24	.25 & Over
15	1	1	0	0					
16	0	0	0	0					
17	1	1	0	0					
18	5	4	2	1		1		1	
19	3	3	1	1				1	
20	4	3	1	0		1			
15 & Below	1	1	0 (0%)	0 (0%)					
16 - 20	13	11	4 (36%)	2 (18%)		2		2	
21 - 25	11	10	8 (80%)	5 (50%)	2	1		4	1
26 - 30	13	11	8 (73%)	6 (55%)	1	1		5	1
31 - 35	5	5	2 (40%)	2 (40%)			1	1	
36 - 40	4	3	2 (67%)	2 (67%)			1	1	
41 - 45	0	0	0 (0%)	0 (0%)					
46 - 50	2	2	0 (0%)	0 (0%)					
51 - 55	2	1	1 (100%)	0 (0%)		1			
56 - 60	1	1	0 (0%)	0 (0%)					
61 - 65	0	0	0 (0%)	0 (0%)					
Total	52	45	25 (56%)	17 (38%)	3	5	2	13	2

* Percentages are based on those tested.

TABLE 4.11

CONTRIBUTING FACTORS IN 1988 MOTORCYCLE CRASHES

Contributing Factors	Attributed to Motorcycle Drivers Number	Percent	Attributed to Other Drivers* Number	Percent
Human Factors:				
Illegal/Unsafe Speed	452	(24.4)	29	(2.8)
Driver Inattention/Distraction	343	(18.5)	278	(26.6)
Physical Impairment	235	(12.7)	33	(3.2)
Driver Inexperience	210	(11.3)	17	(1.6)
Following Too Closely	94	(5.1)	31	(3.0)
Improper Passing/Overtaking	76	(4.1)	14	(1.3)
Improper/Unsafe Lane Use	71	(3.8)	64	(6.1)
Failure to Yield Right of Way	64	(3.5)	361	(34.5)
Disregard for Traffic Control Device	44	(2.4)	24	(2.3)
Driving Left of Roadway Center--Not Passing	40	(2.2)	14	(1.3)
Improper Turn	27	(1.5)	62	(5.9)
Vision Obscured	21	(1.1)	38	(3.6)
Improper Parking/Starting/Stopping/ Stopping	7	(0.4)	17	(1.6)
Impeding Traffic	6	(0.3)	7	(0.7)
Improper or No Signal	6	(0.3)	9	(0.9)
Unsafe Backing	1	(0.1)	12	(1.1)
Pedestrian Violation or Error	0	(0.0)	12	(1.1)
Other Human Factor	38	(2.1)	12	(1.1)
Vehicular Factors:				
Skidding	36	(1.9)	0	(0.0)
Defective Equipment	28	(1.5)	4	(0.4)
Other Vehicle Defect	30	(1.6)	9	(0.9)
Miscellaneous Factors (weather, road defects)	23	(1.2)	0	(0.0)
Total**	1,852	(100)	1,047	(100)
No Improper Driving	661		381	
Total Number Drivers	1,996		1,237	

*Includes Pedestrians

**More than one contributing factor may be attributed to a single driver.

TRUCK CRASHES

This section summarizes data on crashes involving trucks. A vehicle is defined as a truck when the investigating officer indicates on the accident report form that the vehicle is a truck or truck tractor, truck with semi trailer, truck with twin trailer, or truck with other trailer. Pickup trucks and vans are *not* included.

* There were 7,038 truck crashes in 1988--a 24% increase over 1987, but only a 3% increase over the prior three-year average. There were 70 fatal crashes--8% more than in 1987, but 11% fewer than the prior three-year average. Also, there were 1,729 non-fatal injury crashes and 2,444 persons injured. (Table 5.01)

* The persons killed and injured were likely to be in vehicles other than trucks. Only 9% (7) of the persons killed and 27% (656) of the persons injured were truck occupants. (Table 5.02)

* Over half (52%) of the truck drivers were under 36 years of age. The contributing factors that were most often associated with both the truck drivers and the drivers of other vehicles were driver inattention, illegal or unsafe speed, failure to yield right of way, and improper lane use. The first of these alone accounted for about a quarter of all contributing factors cited. Alcohol impairment was suspected of only 1% of the truck drivers and 3% of the other vehicle drivers. Fewer than 1% of both truck and other vehicle drivers were reported to have been asleep or fatigued. (Tables 5.03, 5.04, 5.05)

* As was true for all 1988 crashes, most of the truck crashes occurred during clear weather conditions (61% of the total) and on dry road surfaces (64% of the total). However, 21% (1,446) of the 7,038 crashes occurred on snow or ice-covered roads. This represents a 153% increase over 1987, when 10% (571) of the 5,668 total truck crashes occurred on snow or ice-covered roads. (Tables 5.07, 5.10)

* Only 4% of truck crashes occurred on Sundays. Nine percent occurred on Saturdays. The remaining 87% were distributed about equally among the five weekdays. Almost two thirds (65%) of the crashes occurred during the hours from 9:00 AM to 6:00 PM. They peaked between 3:00 PM and 4:00 PM, a little sooner than all vehicle crashes. (Table 5.08, Figure 5.01) They were somewhat more evenly distributed across months of the year than all vehicle crashes, although January, November and December still accounted for a disproportionate share of the total. (Table 5.09)

* Over a fifth (22%) of truck crashes occurred in cities of over 100,000 (i.e., Minneapolis and St. Paul). Almost a third (32%) occurred in rural areas, defined as areas having a population of less than 5,000. Sixteen percent occurred on interstates. In percentage terms, this is almost twice as large as the corresponding number for all vehicle crashes. Another 40% occurred on state and federal trunk highways. (Tables 5.11, 5.12)

TABLE 5.01

TRUCK CRASHES, 1985 - 1988

	1985	1986	1987	1988
Total Crashes	7,973	6,908	5,668	7,038
Fatal Crashes	86	85	65	70
Fatalities	101	100	71	78
Injury Crashes	1,941	1,674	1,443	1,729
Injuries	2,800	2,371	2,033	2,444

TABLE 5.02

PERSONS INJURED OR KILLED IN 1988 TRUCK CRASHES BY VEHICLE OCCUPIED

Vehicle Type	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries*
Automobile	46	189	462	664	1,315
Truck or Truck Tractor	4	45	142	198	385
Truck with Semi-Trailer	3	18	83	134	235
Truck with Twin Trailer	0	0	2	7	9
Truck with Other Trailer	0	2	8	17	27
Pickup Truck	6	37	72	83	192
Van	8	21	41	61	123
Motorcycle	2	17	7	5	29
All Terrain Vehicle	0	0	2	0	2
School Bus	0	0	4	10	14
Other Bus	0	3	3	11	17
Motorhome Camper	0	2	4	1	7
Snowmobile	0	1	0	2	3
Farm Equipment	0	1	0	1	2
Taxicab	0	0	3	2	5
Hit and Run Vehicle	0	0	0	3	3
Police Vehicle	0	0	1	2	3
Road Maintenance Vehicle	0	0	1	5	6
Other Public Owned Vehicle	0	0	0	1	1
Bicycle	2	6	13	6	25
Pedestrian	7	19	7	11	37
Other	0	1	1	2	4
Total	78	362	856	1,226	2,444

* "Total Injuries" column does not include fatalities.

TABLE 5.03

CONTRIBUTING FACTORS IN 1988 TRUCK CRASHES

Contributing Factors	Attributed to Truck Driver	Attributed to Other Driver
Driver Inattention	1,200 (24.0%)	1,030 (25.9%)
Illegal/Unsafe Speed	532 (10.7%)	471 (11.8%)
Failure to Yield Right of Way	393 (7.9%)	475 (11.9%)
Improper Lane Use	404 (8.1%)	323 (8.1%)
Following Too Closely	329 (6.6%)	230 (5.8%)
Improper Turn	224 (4.5%)	104 (2.6%)
Vision Obscured	216 (4.3%)	129 (3.2%)
Weather	249 (5.0%)	224 (5.6%)
Unsafe Backing	206 (4.1%)	36 (0.9%)
Disregard for Traffic Control Device	123 (2.5%)	118 (3.0%)
Defective Brakes	138 (2.8%)	8 (0.2%)
Driver Inexperience	104 (2.1%)	133 (3.3%)
Improper Passing	105 (2.1%)	180 (4.5%)
Physical Impairment	93 (1.9%)	117 (2.9%)
Skidding	112 (2.2%)	111 (2.8%)
Driving Left of Center	49 (1.0%)	68 (1.7%)
Other Human Factor	77 (1.5%)	53 (1.3%)
Improper Parking	66 (1.3%)	51 (1.3%)
Oversize or Overweight	34 (0.7%)	0 (0.0%)
Defective Tire	33 (0.7%)	4 (0.1%)
Improper or No Signal	28 (0.6%)	16 (0.4%)
Defective Lights	30 (0.6%)	12 (0.3%)
Impeding Traffic	26 (0.5%)	18 (0.5%)
Road Defect	26 (0.5%)	12 (0.3%)
Pedestrian Violation	0 (0.0%)	18 (0.5%)
Other	195 (3.9%)	35 (0.9%)
Total	4,992 (100.0%)	3,976 (99.8%)
No Improper Driving	2,417	2,159
Total Number of Drivers	7,340	6,399

* More than one contributing factor may be attributed to a driver.

TABLE 5.04

TRUCKS IN 1988 CRASHES BY DRIVER AGE

Driver Age	Total	Truck or Truck Tractor	Truck with Semi-Trailer	Truck with Twin Trailer	Truck with Other Trailer
15 & Below	5	2	2	0	1
16 - 20	354	287	42	2	23
21 - 25	1,081	669	368	3	41
26 - 30	1,290	764	461	1	64
31 - 35	1,053	549	454	6	44
36 - 40	821	408	376	4	33
41 - 45	683	291	350	10	32
46 - 50	519	215	273	9	22
51 - 55	400	192	183	7	18
56 - 60	307	132	155	6	14
61 - 65	156	88	55	1	12
66 - 70	64	33	24	0	7
71 and above	31	27	2	0	2
Not Stated	576	412	154	1	9
Total	7,340	4,069	2,899	50	322

TABLE 5.05

DRIVERS IN 1988 TRUCK CRASHES BY PHYSICAL CONDITION*

Physical Condition	Truck Driver	Other Driver
Normal	5,341	4,359
Under the Influence	48	97
Had Been Drinking	33	74
Had Been Using Drugs	1	1
Asleep	41	10
Fatigued	17	12
Ill	3	7
Handicapped	0	5
Other	9	18
Unknown	1,847	1,816
Total	7,340	6,399

* As noted by police officer on accident report.

TABLE 5.06

1988 TRUCK CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:						
Other Motor Vehicle	55	212	444	665	3,910	5,286
Parked Motor Vehicle	2	8	27	15	357	409
Railroad Train	0	3	2	3	17	25
Bicycle	2	6	11	6	3	28
Pedestrian	5	18	7	7	0	37
Animal	0	1	5	5	98	109
Fixed Object	1	12	34	34	404	485
Other Object	1	1	5	13	68	88
Non-Collision:						
Overturn	4	18	62	74	189	347
Fire Explosion	0	0	1	1	14	16
Submersion	0	0	0	0	2	2
Other	0	3	6	20	177	206
Total	70	282	604	843	5,239	7,038

TABLE 5.07

1988 TRUCK CRASHES BY ROAD CONDITION

Road Surface Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Dry	51	190	402	553	3,323	4,519
Wet	8	36	75	121	646	886
Snow or Slush	2	10	29	33	263	337
Ice or Snow Packed	7	41	90	123	848	1,109
Other	2	3	4	5	30	44
Unknown	0	2	4	8	129	143
Total	70	282	604	843	5,239	7,038

TABLE 5.08

1988 TRUCK CRASHES BY TIME OF DAY

Time Period	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	223	27	27	23	30	29	34	53
3:00 - 5:59 AM	162	12	18	26	29	20	31	26
6:00 - 8:59 AM	974	18	176	210	168	175	164	63
9:00 - 11:59 AM	1,454	41	293	270	254	228	251	117
Noon - 2:59 PM	1,565	55	324	283	234	241	295	133
3:00 - 5:59 PM	1,547	67	269	288	262	285	284	92
6:00 - 8:59 PM	552	50	78	86	106	83	96	53
9:00 - 11:59 PM	322	20	39	47	48	61	69	38
Unknown	239	12	36	33	36	44	53	25
Total	7,038	302	1,260	1,266	1,167	1,166	1,277	600

FIGURE 5.01

Total 1988 Truck Crashes vs. All Motor Vehicle Crashes by Time of Day

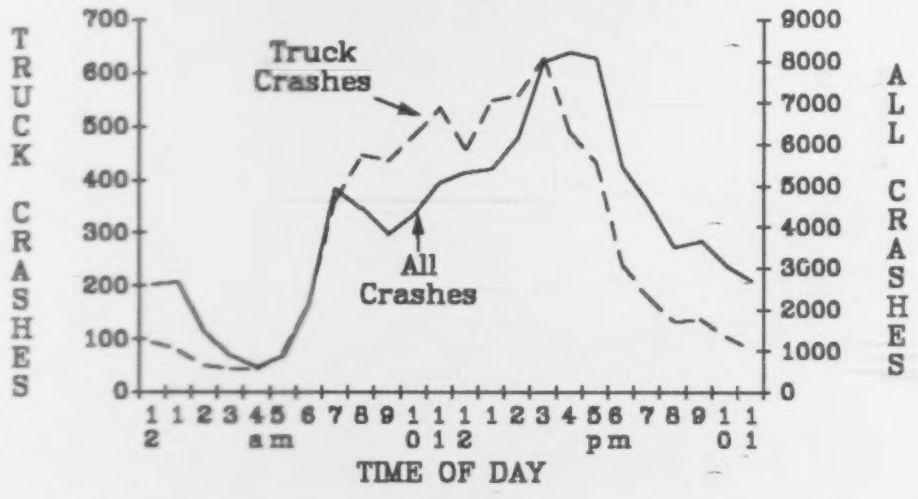


TABLE 5.09

1988 TRUCK CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	2	164	600	766	2	239
February	6	129	444	579	6	189
March	6	90	306	402	6	138
April	7	100	320	427	7	125
May	8	133	341	482	8	168
June	9	141	402	552	11	207
July	5	137	430	572	6	200
August	4	170	443	617	4	239
September	6	155	397	558	6	217
October	6	173	478	657	9	263
November	5	178	542	725	6	224
December	6	159	536	701	7	235
Total	70	1,729	5,239	7,038	78	2,444

TABLE 5.10

1988 TRUCK CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Clear	47	184	356	509	3,201	4,297
Cloudy	17	60	129	182	1,016	1,404
Rain	2	13	39	60	324	438
Snow	2	14	49	49	387	501
Sleet/Hail/Freezing Rain	1	2	6	8	42	59
Fog/Smog/Smoke	0	1	6	6	47	60
Blowing Sand/Dust/Snow	1	5	14	15	94	129
Severe Cross Winds	0	0	3	5	16	24
Other	0	0	0	3	13	16
Unknown	0	3	2	6	99	110
Total	70	282	604	843	5,239	7,038

TABLE 5.11

1988 TRUCK CRASHES BY POPULATION AREA

Population Area	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
100,000 & Over	7	43	93	179	1,240	1,562
50,000 - 99,999	4	10	30	44	318	406
25,000 - 49,999	4	42	89	119	874	1,128
10,000 - 24,999	4	37	77	116	681	915
5,000 - 9,999	6	12	37	60	387	502
2,500 - 4,999	0	11	28	38	218	295
1,000 - 2,499	5	14	18	21	126	184
Under 1,000	38	103	208	242	1,160	1,751
Unknown	2	10	24	24	235	295
Total	70	282	604	843	5,239	7,038

TABLE 5.12

1988 TRUCK CRASHES BY TYPE OF ROADWAY

Roadway Type	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Minor Injury Crashes	Property Damage Crashes	Total Crashes
Interstate Highway	9	37	81	150	882	1,159
US Trunk Highway	22	57	103	169	901	1,252
State Trunk Highway	21	53	163	205	1,135	1,577
County State-Aid Highway	10	81	141	172	956	1,360
Municipal State-Aid Street	3	26	59	77	690	855
County Road	2	2	10	15	70	99
Township Road	2	3	12	13	60	90
Municipal Street	1	21	33	41	494	590
Other Road	0	2	2	1	51	56
Total	70	282	604	843	5,239	7,038

PEDESTRIAN CRASHES

There were 1,575 crashes that involved pedestrians in 1988; this is a 4% decrease from the preceding five year average of 1,643. The 1,566 injuries suffered in 1988 represent a 5% decrease from the preceding five-year average of 1,649. However, the 69 fatalities in 1988 represent an 11% increase from 1987 and a 10% increase from the preceding five-year average.

* The number of pedestrian fatalities has generally been declining since 1973 and has been below 100 since 1982. In the combined period of 1979 - 1988, pedestrians between the ages of 15 and 19 were the most likely to be killed. (Table 6.01 and Figure 6.01)

* The age group 5 - 9 suffered 255 injuries which represents 16%, of the total. Forty-two percent of the fatalities were suffered by those under the age of 30. This group also sustained 58% of the injuries. Almost twice as many male pedestrians were killed as female. (Table 6.02 and Figure 6.02)

* October had the most pedestrian accidents of any single month. The three month period of September through November saw 36% of the fatal crashes, 30% of all crashes, 38% of the fatalities and 29% of the injuries. (Table 6.03)

* The most pedestrian crashes occurred between 5:00 and 6:00 PM. The hours from 2:00 to 7:00 AM had relatively few crashes. Friday had 18% of the crashes; Sunday had only 8%. (Figure 6.03 and Table 6.04)

* Rural areas (areas of under 5,000 population) were overrepresented in fatal accidents. Forty-one percent of the fatal crashes and only 12% of the injury crashes occurred in rural areas. Seventy percent of the pedestrian crashes involved a vehicle that was going straight, another 8% involved a vehicle that was turning left. (Tables 6.05 and 6.06)

* Pedestrians crossing a road where no crosswalk or signal was present accounted for 35% of the fatalities and 25% of the injuries. Pedestrians who crossed against the signal made up another 6% of the fatalities and 7% of the injuries. Sixteen percent of the pedestrians injured and 3% of the pedestrians killed were crossing with the signal at the time of the accident. (Table 6.07)

* Officers investigating pedestrian crashes found no improper actions for 19% of the pedestrians and 42% of the drivers. Of the contributing factors cited for pedestrians, 90% were for a pedestrian violation and 9% for physical impairment. Of the factors cited for drivers, 34% were for driver inattention and 20% for failure to yield the right of way. (Table 6.08)

* Of the 69 pedestrians who died, 47 (68%) were tested for blood alcohol concentration. Of these, 47% had been drinking and 43% were over the .10% legal limit of intoxication. Ninety-one percent of those tested who had been drinking were legally drunk. (Table 6.09 and Figure 6.04)

* The fatalities who tested positive for blood alcohol were spread across age groups with thirty-six percent 30 years old or younger. The pedestrians killed between 6:00 PM and 3:00 AM made up 82% of those who tested positive for blood alcohol and 80% of those who were legally drunk. (Tables 6.10 and 6.11)

TABLE 6.01

PEDESTRIAN CRASHES, INJURIES, FATALITIES, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Pedestrian Crashes*	1,700	1,629	1,648	1,374	1,516	1,690	1,845	1,610	1,556	1,575
Pedestrians Injured	1,678	1,636	1,658	1,438	1,625	1,682	1,837	1,570	1,533	1,566
Pedestrians Killed	117	114	100	76	62	55	65	71	62	69

*A pedestrian crash is an incident in which a pedestrian is struck by a motor vehicle. Prior to 1984, such an incident was defined as a crash only when the first "object" struck was a pedestrian.

FIGURE 6.01

Pedestrian Fatalities by Age Group
1979–1988 Combined

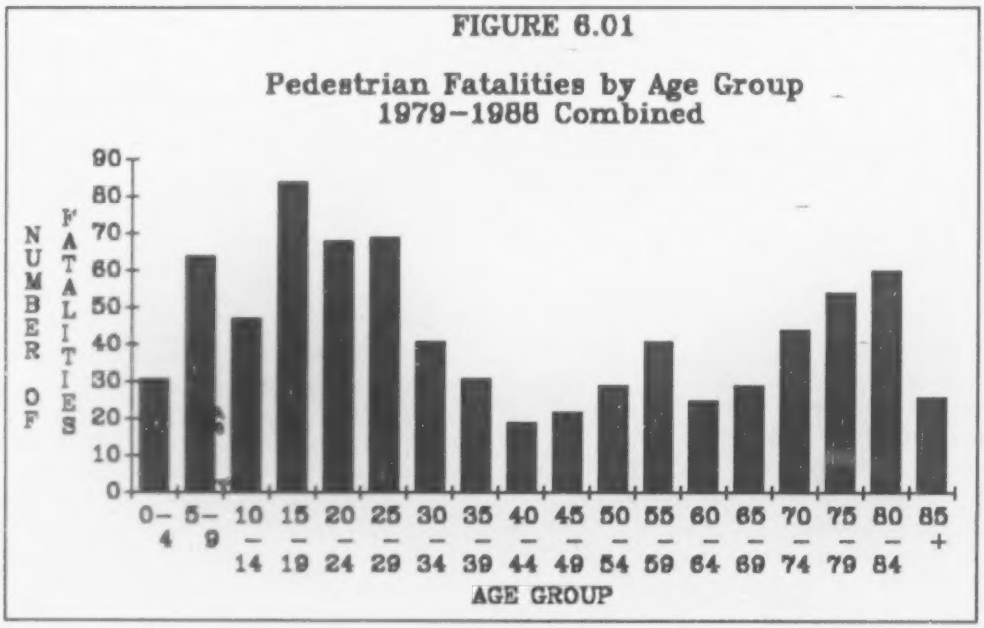


TABLE 6.02

PEDESTRIANS KILLED AND INJURED BY AGE AND SEX, 1988

Age	Killed			Severe Injuries			Moderate Injuries			Possible Injuries			Total Injuries**		
Group	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	2	2	4	25	7	32	19	19	38	19	16	37	63	42	107
5 - 9	3	1	4	39	28	67	59	30	89	62	36	99	160	94	255
10 - 14	3	5	8	24	12	36	41	17	58	31	25	56	96	54	150
15 - 19	3	0	3	23	26	49	31	24	55	19	28	47	73	78	151
20 - 24	1	2	3	19	12	31	23	16	39	27	20	47	69	48	117
25 - 29	4	3	7	18	14	32	23	15	38	26	24	52	67	53	122
30 - 34	5	0	5	21	15	36	17	10	27	22	11	34	60	36	97
35 - 39	1	0	1	13	14	27	14	17	31	20	14	34	47	45	92
40 - 44	3	0	3	9	7	16	6	5	11	14	15	29	29	27	56
45 - 49	2	0	2	9	4	13	3	7	10	10	7	17	22	18	40
50 - 54	2	0	2	4	3	8	9	8	18	9	5	14	22	16	40
55 - 59	4	4	8	7	5	12	8	6	14	3	3	6	18	14	32
60 - 64	3	1	4	4	11	15	5	6	11	7	7	14	16	24	40
65 - 69	1	0	1	5	8	13	6	4	10	3	2	5	14	14	28
70 - 74	2	2	4	3	7	10	4	7	11	1	6	7	8	20	28
75 - 79	4	1	5	5	14	19	1	6	7	6	5	11	12	25	37
80 - 84	2	1	3	5	4	9	8	6	14	3	3	6	16	13	29
85 & Over	0	2	2	2	4	6	2	2	4	0	0	0	4	6	10
Not Stated	0	0	0	6	3	10	9	6	16	60	40	109	75	49	135
Total	45	24	69	241	198	441	288	211	501	342	267	624	871	676	1,566

* Where columns do not add across, sex was not stated on accident report.
**Does not include fatalities.

FIGURE 6.02

1988 Pedestrian Injuries and Fatalities by Age and Sex

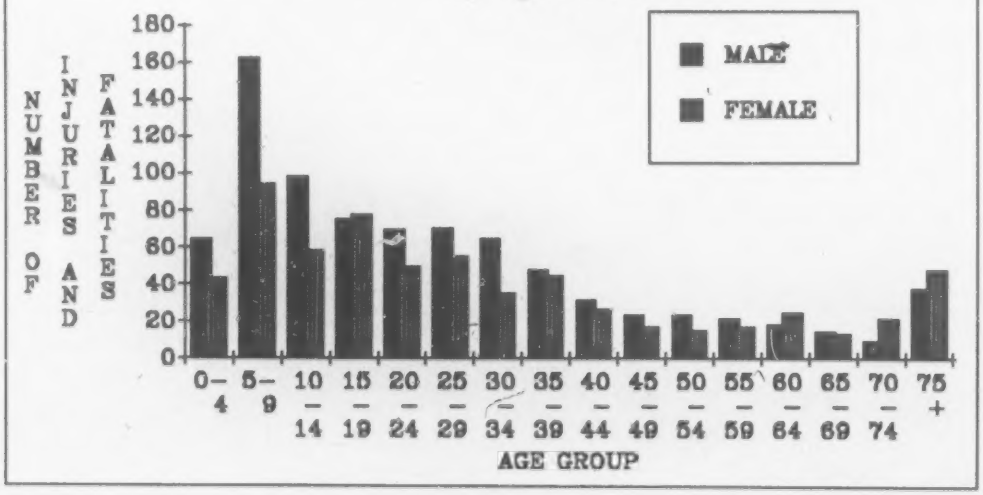


TABLE 6.03

1988 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes	Pedestrian Fatalities	Pedestrian Injuries
January	6	121	127	6	134
February	4	111	115	4	114
March	5	108	113	5	113
April	3	117	120	3	118
May	6	126	132	6	129
June	4	117	121	4	118
July	3	121	124	3	125
August	6	104	110	6	107
September	8	139	147	8	142
October	8	161	169	9	170
November	9	141	150	9	147
December	7	140	147	6	149
Total	69	1,506	1,575	69	1,566

FIGURE 6.03

1988 Pedestrian Crashes by Time of Day

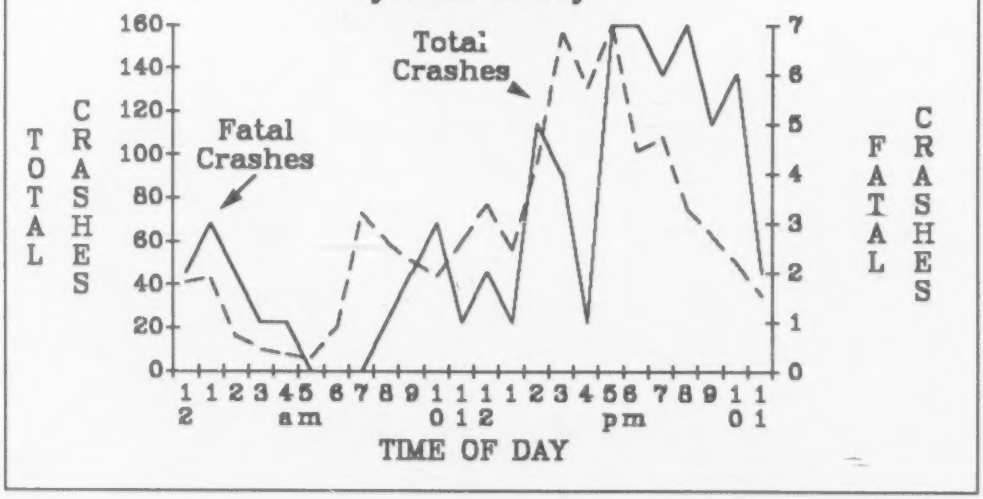


TABLE 6.04

1988 PEDESTRIAN CRASHES BY TIME AND DAY

Hour Beginning	Fatal Crashes	Total Crashes	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight	2	41	9	2	6	3	5	5	11
1:00 am	3	43	15	1	1	1	4	8	13
2:00 am	2	16	3	1	2	1	1	3	5
3:00 am	1	10	2	0	2	0	3	2	1
4:00 am	1	8	3	2	0	0	2	0	1
5:00 am	0	6	0	1	1	0	3	1	0
6:00 am	0	20	0	7	5	2	3	3	0
7:00 am	0	73	1	13	18	10	19	11	1
8:00 am	1	60	0	12	12	14	10	9	3
9:00 am	2	51	6	8	5	11	9	7	5
10:00 am	3	44	4	4	10	7	4	8	7
11:00 am	1	60	7	8	11	5	4	19	6
Noon	2	77	6	15	10	9	12	8	17
1:00 pm	1	56	3	10	11	5	7	12	8
2:00 pm	5	96	9	13	15	13	17	20	9
3:00 pm	4	156	8	28	25	32	25	24	14
4:00 pm	1	131	8	21	18	29	21	22	12
5:00 pm	7	160	12	26	29	22	31	27	13
6:00 pm	7	102	5	10	18	20	13	23	13
7:00 pm	6	108	9	10	25	15	19	14	16
8:00 pm	7	75	1	11	9	17	11	15	11
9:00 pm	5	63	3	12	10	8	7	12	11
10:00 pm	6	50	2	6	3	8	7	14	10
11:00 pm	2	35	2	0	5	3	5	9	11
Unknown	0	34	2	6	9	5	1	4	7
Total	69	1,575	120	227	260	240	243	280	205

TABLE 6.05

1988 PEDESTRIAN CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Injury Crashes	Total Crashes
100,000 and Over	16	716	732
50,000 - 99,999	5	88	93
25,000 - 49,999	6	168	174
10,000 - 24,999	8	180	188
5,000 - 9,999	4	82	86
2,500 - 4,999	3	46	49
1,000 - 2,499	4	32	36
Under 1,000	21	105	126
Unknown	2	89	91
Total	69	1,506	1,575

TABLE 6.06

VEHICLE MOVEMENT IN 1988 PEDESTRIAN CRASHES

Vehicle Movement	Fatal Crashes	Injury Crashes	Total Crashes
Vehicle Going Straight	49	1,046	1,095
Vehicle Turning Left	3	125	128
Vehicle Turning Right	2	81	83
Vehicle Backing	2	34	36
Moving Vehicle Colliding with Parked Vehicle	1	10	11
Two Vehicles Colliding at Intersection	0	8	8
Moving Vehicle Colliding with Vehicle Stopped in Traffic	2	8	10
All Others	10	149	159
Not Stated	0	45	45
Total	69	1,506	1,575

TABLE 6.07

PRIOR ACTION OF PEDESTRIANS KILLED AND INJURED IN 1988

Action	Persons Killed		Persons Injured	
	Number	Percent	Number	Percent
Crossing Road (No Crosswalk and no Signal)	24	(34.8%)	393	(25.1%)
Crossing Against Signal	4	(5.8%)	103	(6.6%)
Crossing With Signal	2	(2.9%)	249	(15.9%)
Crossing In Crosswalk (No Signal)	2	(2.9%)	113	(7.2%)
Walking In Road With Traffic	3	(4.3%)	91	(5.8%)
Walking In Road Against Traffic	3	(4.3%)	60	(3.8%)
Standing In Road	2	(2.9%)	57	(3.6%)
Emerging From Front/Behind Parked Car	1	(1.4%)	91	(5.8%)
Child Getting On/Off School Bus	1	(1.4%)	4	(0.3%)
Pushing/Working On Vehicle	1	(1.4%)	8	(0.5%)
Working In Road	1	(1.4%)	7	(0.5%)
Getting On/Off Vehicle	0	(0.0%)	11	(0.7%)
Playing In Road	0	(0.0%)	33	(2.1%)
Not In Road	4	(5.8%)	42	(2.7%)
Other Pedestrian Action	20	(29.0%)	302	(19.3%)
Unknown	1	(1.4%)	2	(0.1%)
Total	69	(100%)	1,566	(100%)

* Percent totals may not sum to 100% due to rounding.

TABLE 6.08

CONTRIBUTING FACTORS IN 1988 PEDESTRIAN CRASHES

Contributing Factors	Attributed to Pedestrians* Number**	Percent	Attributed to Motor Vehicle Drivers* Number**	Percent
Human factors				
Pedestrian Violation	689	(89.8%)	0	(0.0%)
Physical Impairment	65	(8.5%)	45	(3.5%)
Driver Inattention	0	(0.0%)	442	(34.0%)
Failure to Yield Right of Way	2	(0.3%)	264	(20.3%)
Illegal or Unsafe Speed	0	(0.0%)	99	(7.6%)
Vision Obscured	0	(0.0%)	117	(9.0%)
Improper Lane Use	0	(0.0%)	32	(2.5%)
Disregard for Traffic Control Device	1	(0.1%)	48	(3.7%)
Driver Inexperience	0	(0.0%)	41	(3.2%)
Unsafe Backing	0	(0.0%)	29	(2.2%)
Improper Parking	0	(0.0%)	23	(1.8%)
Driving Left of Center	0	(0.0%)	6	(0.5%)
Improper Passing	0	(0.0%)	12	(0.9%)
Improper Turn	0	(0.0%)	16	(1.2%)
Other Human Factors	1	(0.1%)	41	(3.2%)
Vehicular Factors				
Defective Equipment	0	(0.0%)	15	(1.1%)
Skidding	0	(0.0%)	23	(1.8%)
Other Vehicular Factors	0	(0.0%)	11	(0.8%)
Miscellaneous Factors				
Weather Conditions	9	(1.2%)	34	(2.6%)
Road Defects	0	(0.0%)	2	(0.1%)
Total Contributing Factors Cited	767	(100.0%)	1,300	(100.0%)
No improper actions:	310		721	
Total number of pedestrians/drivers	1,633		1,725	

* Percentages are based on the total number of contributing factors cited for all pedestrians and drivers.

** One or two contributing factors may be cited for each pedestrian or motor vehicle driver.

TABLE 6.09

DRINKING PEDESTRIAN FATALITY SUMMARY, 1979 - 1988

	Killed	Tested	Drinking* (.01 or more)	Drunk* (.10 or more)
1979	117	56	29 (52%)	26 (46%)
1980	114	48	28 (58%)	26 (54%)
1981	100	53	26 (49%)	23 (43%)
1982	76	40	18 (45%)	17 (43%)
1983	62	38	21 (55%)	18 (47%)
1984	55	38	20 (53%)	18 (47%)
1985	65	37	15 (41%)	10 (27%)
1986	71	49	28 (57%)	27 (55%)
1987	62	42	19 (45%)	17 (40%)
1988	69	47	22 (47%)	20 (43%)

* Percentages based on those tested.

FIGURE 6.04

Drinking Pedestrian Fatalities
1979 - 1988

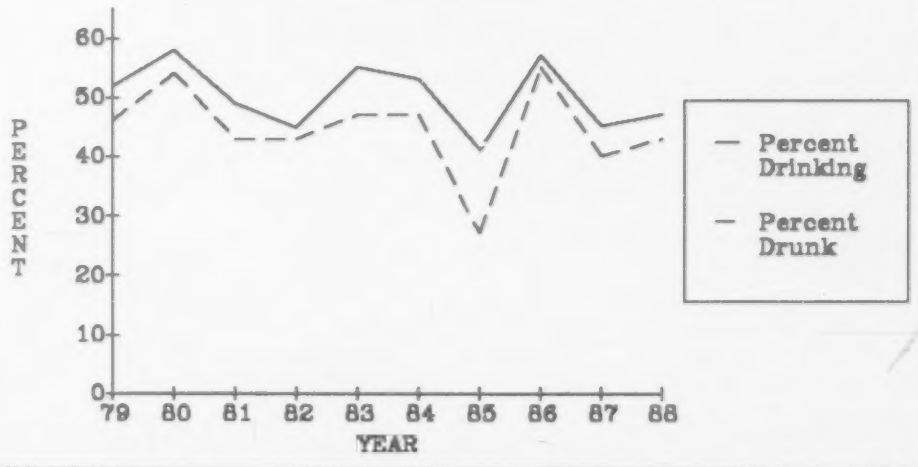


TABLE 6.10

1988 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY AGE

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
15 & below	16	6	0	0
16 - 20	4	4	4	4
21 - 25	3	3	1	1
26 - 30	5	4	3	3
31 - 35	5	5	4	3
36 - 40	1	1	1	1
41 - 45	3	3	1	1
46 - 50	2	2	1	1
51 - 55	3	2	1	1
56 - 60	9	6	4	4
61 - 65	3	2	0	0
66 & Above	14	9	2	1
Unknown	1	0	0	0
Total	69	47	22	20

TABLE 6.11

1988 PEDESTRIAN FATALITIES' LEVEL OF ALCOHOL CONCENTRATION BY TIME OF DAY

	Killed	Tested	Drinking (.01 or more)	Drunk (.10 or more)
Midnight - 2:59 AM	7	7	6	5
3:00 - 5:59 AM	2	2	1	1
6:00 - 8:59 AM	1	0	0	0
9:00 - 11:59 AM	6	4	0	0
Noon - 2:59 PM	9	5	1	1
3:00 - 5:59 PM	12	6	2	2
6:00 - 8:59 PM	19	13	5	4
9:00 - 11:59 PM	13	10	7	7
Unknown	0	0	0	0
Total	69	47	22	20

BICYCLE CRASHES

Bicycles are subject to the same traffic laws as motor vehicles, but bicycle accidents are only reported to the State Department of Public Safety if they involve collision with a motor vehicle.

Data before 1984 only included bicycles if they were the first "object" struck by the motor vehicle. Beginning in 1984, all motor vehicle accidents that involved collision with a bicycle were reported as bike accidents. The number of bicycle crashes reported here rose slightly as a result.

Although there were fewer bicycle crashes in 1988 than there were in 1987, the basic upward trend continues. There was an increase of 6% in the number of accidents and 7% in the number of injuries over the average of the previous five years. There were 1,448 crashes and 1,401 injuries to bicyclists. The number of fatalities continues to fluctuate rising to a total of 16 deaths in 1988. Almost all (97%) of bicycle crashes reported involve injury or death.

* The four month period of May through August had 66% of the crashes, 67% of the injuries, and 69% of the fatalities for 1988. June had the highest number of crashes and injuries and August the highest number of fatalities. Most bicycle crashes occurred during afternoon hours on weekdays. Saturday and Sunday together accounted for only 20% of the crashes while weekdays averaged 16% per day. Thirty-four percent of the accidents occurred between 3:00 and 6:00 PM. (Tables 7.02 and 7.03, and Figure 7.01)

* Young males between the ages of 10 and 14 were most likely to be injured in a bicycle crash; they made up 18% of the injuries. People between the ages of 5 and 19 made up 61% of the injuries and 38% of the fatalities. Males made up 69% of the fatalities and 72% of the injuries. There were twice as many males injured as females in almost every age group. (Table 7.04 and Figure 7.02)

* Driver Inattention/Distraction and Failure to Yield the Right of Way were the top two contributing factors cited for both bicyclists and motor vehicle drivers. The third most cited factor was Disregard for Traffic Control Device for bicyclists and Vision Obscured for motor vehicle drivers. Forty-four percent of the motor vehicle drivers were reported to have performed No Improper Driving; this was true for only 23% of the bicyclists. (Table 7.05)

* Bicyclists were riding with traffic or attempting to cross the road prior to the collision in 57% of the crashes. Excluding those bicyclists whose prior action is unknown, this jumps to 77%. (Table 7.06)

* Thirty-six percent of the bicycle crashes in 1988 occurred in areas of 100,000 or more population. Half of the fatal crashes occurred in areas of under 5,000 population. (Table 7.07)

TABLE 7.01

BICYCLE CRASHES, INJURIES, FATALITIES, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Bicycle Crashes	1,067	1,276	1,255	1,130	1,220	1,282	1,375	1,367	1,574	1,448
Bicyclists Injured	993	1,295	1,213	1,105	1,194	1,258	1,342	1,309	1,452	1,401
Bicyclists Killed	14	19	10	12	14	15	10	12	15	16

TABLE 7.02

1988 BICYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes	Bicyclist Fatalities	Bicyclist Injuries
January	0	7	0	7	0	6
February	0	11	0	11	0	11
March	0	40	2	42	0	40
April	1	117	9	127	1	117
May	2	198	5	205	2	201
June	3	266	12	281	3	271
July	1	245	6	252	1	248
August	5	214	5	224	5	218
September	3	151	2	156	3	151
October	1	94	2	97	1	97
November	0	33	4	37	0	33
December	0	8	1	9	0	8
Total	16	1,384	48	1,448	16	1,401

TABLE 7.03

1988 BICYCLE CRASHES BY TIME AND DAY

Time Period	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	33	8	0	2	4	2	8	9
3:00 - 5:59 AM	2	1	0	1	0	0	0	0
6:00 - 8:59 AM	93	0	15	22	15	21	17	3
9:00 - 11:59 AM	154	10	23	24	17	20	33	27
Noon - 2:59 AM	245	33	36	38	42	33	33	30
3:00 - 5:59 PM	489	42	80	83	83	67	94	40
6:00 - 8:59 PM	308	30	46	45	49	55	46	37
9:00 - 11:59 AM	92	6	16	15	15	17	12	11
Unknown	32	2	8	3	2	7	5	5
Total	1,448	132	224	233	227	222	248	162

FIGURE 7.01

1988 Bicycle Crashes by Time of Day

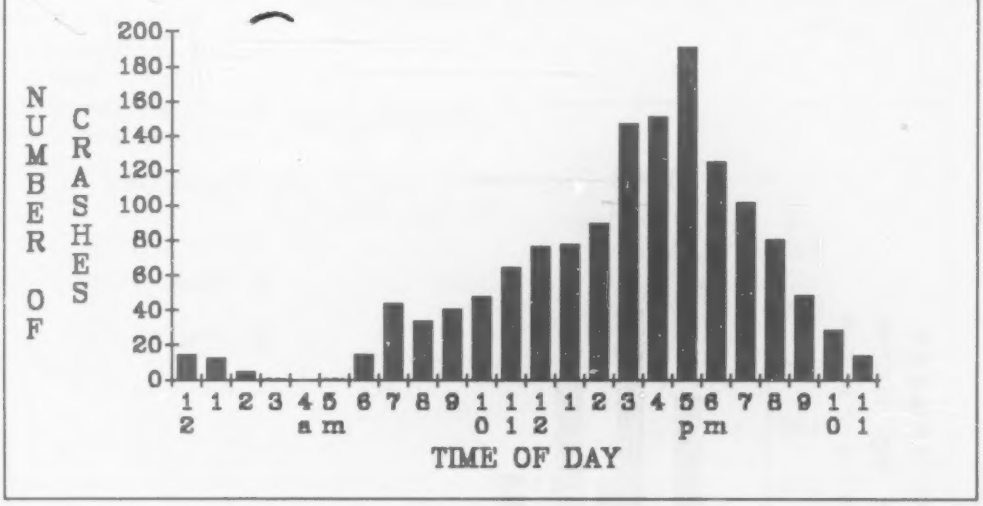


TABLE 7.04

AGE AND SEX OF BICYCLISTS BY INJURY SEVERITY IN 1988 CRASHES

	Killed			Severe Injury			Moderate Injury			Possible Injury			Total Injuries**		
Age Group	M	F	Total	M	F	Total	M	F	Total*	M	F	Total*	M	F	Total*
0 - 4	0	0	0	3	0	3	8	3	11	7	2	9	18	5	23
5 - 9	2	1	3	30	13	43	99	31	130	48	17	65	177	61	238
10 - 14	0	3	3	49	19	68	127	60	187	76	27	103	252	106	358
15 - 19	0	0	0	25	8	33	106	45	151	57	23	80	188	76	264
20 - 24	4	0	4	19	6	25	56	28	84	35	9	44	110	43	153
25 - 29	0	0	0	14	8	22	32	7	39	20	13	33	66	28	94
30 - 34	1	1	2	5	4	9	25	9	34	17	9	26	47	22	69
35 - 39	0	0	0	3	1	4	14	2	16	7	5	12	24	8	32
40 - 44	0	0	0	4	0	4	4	5	9	8	2	10	16	7	23
45 - 49	0	0	0	3	0	3	4	1	5	3	1	4	10	2	12
50 - 54	2	0	2	5	2	7	2	1	3	1	0	1	8	3	11
55 - 59	0	0	0	0	1	1	1	1	2	0	0	0	1	2	3
60 - 64	0	0	0	2	1	3	2	1	3	0	1	1	4	3	7
65 - 69	0	0	0	1	0	1	2	0	2	0	0	0	3	0	3
70 - 74	1	0	1	0	0	0	0	0	0	0	1	1	0	1	1
75 & Over	0	0	0	1	0	1	4	0	4	0	0	0	5	0	5
Not Stated	1	0	1	4	0	4	17	4	22	55	23	79	76	27	105
Total	11	5	16	168	63	231	503	198	702	334	133	468	1,005	394	1,401

* Where columns do not add across, sex was not stated on the accident report.
** Does not include fatalities.

FIGURE 7.02

1988 Bicyclist Injuries and Fatalities by Age and Sex

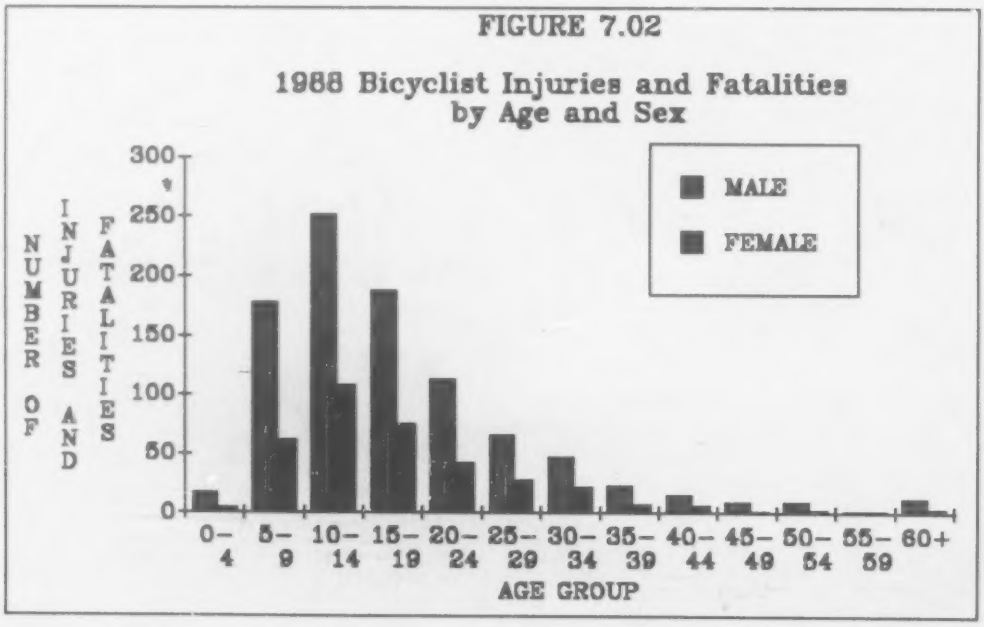


TABLE 7.05

CONTRIBUTING FACTORS IN 1988 BICYCLE CRASHES

Contributing Factors	Attributed to Bicycle Drivers Number*	Percent	Attributed to Motor Vehicle Drivers Number*	Percent
Human Factors				
Driver Inattention/Distraction	333	(27.0)	376	(38.1)
Failure to Yield Right of Way	230	(18.7)	282	(28.6)
Disregard for Traffic Control Device	126	(10.2)	28	(2.9)
Improper/Unsafe Lane Use	122	(9.9)	25	(2.5)
Driver Inexperience	99	(8.0)	20	(2.0)
Improper Turn	50	(4.1)	32	(3.3)
Vision Obscured	40	(3.3)	98	(9.9)
Driving Left of Roadway Center--Not Passing	41	(3.3)	13	(1.3)
Illegal/Unsafe Speed	21	(1.7)	29	(2.9)
Improper Parking/ Starting/Stopping	11	(0.9)	9	(0.9)
Improper Passing/Overtaking	10	(0.8)	15	(1.5)
Physical Impairment	9	(0.7)	11	(1.1)
Following Too Closely	7	(0.6)	7	(0.7)
Impeding Traffic	3	(0.2)	1	(0.1)
Improper or No Signal	3	(0.2)	2	(0.2)
Other Human Factors	53	(4.3)	21	(2.1)
Vehicular Factors				
Defective Equipment	53	(4.3)	3	(0.3)
Skidding	2	(0.2)	7	(0.7)
Other Vehicular Factors	17	(1.4)	5	(0.5)
Miscellaneous Factors				
Weather	2	(0.2)	4	(0.4)
Total	1,232	(100)	988	(100)
No Improper Driving	333		640	
Total Number of Bicyclists/ Drivers	1,456		1,459	

* More than one contributing factor may be attributed to a driver.

TABLE 7.06

PRIOR ACTION OF BICYCLE DRIVERS INVOLVED IN 1988 CRASHES

Action	Bicyclists In Fatal Crashes	Bicyclists In Injury Crashes	Bicyclists In Property Damage Crashes	Bicyclists In All Crashes*
Riding With Traffic	4	446	13	463
Riding Against Traffic	1	131	0	132
Making Left Turn	1	67	1	69
Making Right Turn	0	21	1	22
Making U Turn	0	3	0	3
Riding Across Road	3	357	5	365
Slowing, Starting, Stopping	1	18	0	19
Other/Unknown	6	349	28	383
Total	16	1,392	48	1,456

* The total number of bicycle driver actions exceeds the number of bicycle crashes because more than one bicycle may be involved in a crash.

TABLE 7.07

1988 BICYCLE CRASHES BY POPULATION AREA

Population of City or Township	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Possible Injury Crashes	Property Damage Crashes	All Crashes
100,000 and Over	3	70	222	194	25	514
50,000 - 99,999	0	15	35	23	1	74
25,000 - 49,999	2	44	163	80	11	300
10,000 - 24,999	1	30	122	62	5	220
5,000 - 9,999	1	16	47	28	2	94
2,500 - 4,999	3	7	21	17	1	49
1,000 - 2,499	0	2	13	4	0	19
Under 1,000	5	32	31	18	3	89
Unknown	1	15	43	30	0	89
Total	16	231	697	456	48	1,448

SCHOOL BUS CRASHES

Although the number of accidents in 1988 is considerably higher than 1987, it is only slightly higher than the preceding five year average and is lower than the average of the five years before 1987. There were of 679 crashes (three of which were fatal) resulting in 3 fatalities and 359 injuries.

All three fatalities were drivers of other vehicles who were cited for committing an improper action. Persons on the bus accounted for 54% of the injuries, pedestrians for 4%, and those in other vehicles, 42%.

* Persons between the ages of 10-19 were most often injured in school bus crashes. Of those on the bus, the age group with the highest number of injuries was 10-14 year olds, while in other vehicles 15-19 was the age group most often injured. (Table 8.02)

* Two of the three fatalities and 30% of the injuries occurred in areas of under 1,000 population. About a fifth of the injuries occurred in crashes in cities of 100,000 or more. (Table 8.03)

* Most of the school bus crashes (88%) involved another motor vehicle that was moving; another 7% were collisions with a parked vehicle. (Table 8.04)

* Sixty-six percent of the total crashes occurred between 6:00 and 9:00 AM or 3:00 and 6:00 PM. The month of January had the most accidents (22%) compared with 5% for the months of June, July and August combined. This is to be expected since most schools are not in session during the summer months. (Table 8.05 and Table 8.06)

* The contributing factor cited most often for both school bus and other vehicle drivers was driver inattention or distraction. The second most cited factor for school bus drivers was failure to yield right of way. The second most cited factor for other drivers was illegal or unsafe speed. "No improper driving" was reported in the case of 48 percent of the school bus drivers and 28 percent of the drivers of other vehicles in school bus crashes. (Table 8.07)

* The year 1988 resembles 1987 with respect to traffic control devices where traffic accidents occurre` . Forty-nine percent of the crashes occurred where there was no traffic signal present, 22% where there was a stop sign present at an intersection, but not at all approaches, and 17% where there was a traffic light. (Table 8.08)

TABLE 8.01

SCHOOL BUS CRASHES, 1979 - 1988

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total Crashes	852	672	681	729	687	675	723	662	530	679
Fatal Crashes	6	1	2	2	7	3	4	3	6	3
Fatalities	6	1	2	2	8	3	4	3	6	3
Injury Crashes	184	171	155	160	161	176	191	160	141	175
Injuries	*	*	*	282	321	340	366	265	244	359
School Buses Involved in Crashes	866	678	692	737	694	686	729	667	534	684

* Not Available.

TABLE 8.02

AGE AND SEX OF PERSONS KILLED & INJURED IN 1988 SCHOOL BUS CRASHES

Age	Total*	In Bus	Pedestrian	In Other Vehicle	Male	Female
0 - 4	1	0	0	1	0	1
5 - 9	26	21	2	3	9	17
10 - 14	63	56	1	6	36	27
15 - 19	52	22	1	29	24	28
20 - 24	32	5	2	25	15	17
25 - 29	20	4	1	15	10	10
30 - 34	21	5	0	16	9	12
35 - 39	16	2	1	13	10	6
40 - 44	8	2	1	5	5	3
45 - 54	19	3	1	15	7	12
55 - 64	10	7	0	3	8	2
65 & Over	18	5	0	13	9	9
Unknown	76	62	3	11	26	12
Total	362	194	13	155	168	156

* There were 38 cases where the sex of the person was unknown/not stated

TABLE 8.03

PERSONS INJURED OR KILLED IN 1988 SCHOOL BUS CRASHES BY POPULATION AREA

Population of City or Township	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Injuries & Fatalities
100,000 and Over	0	7	11	49	67
50,000 - 99,999	0	2	7	12	21
25,000 - 49,999	0	1	18	30	49
10,000 - 24,999	1	4	17	24	46
5,000 - 9,999	0	2	6	16	24
2,500 - 4,999	0	2	4	3	9
1,000 - 2,499	0	0	0	2	2
Under 1,000	2	8	16	82	108
Unknown	0	3	12	21	36
Total	3	29	91	239	362

TABLE 8.04

1988 SCHOOL BUS CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Collision With:				
Other Motor Vehicle	3	148	446	597
Parked Motor Vehicle	0	3	44	47
Bicycle	0	3	0	3
Pedestrian	0	11	0	11
Animal	0	0	2	2
Fixed Object	0	2	5	7
Other Object	0	1	0	1
Non-collision:				
Overturn	0	2	2	4
Other	0	5	2	7
Total	3	175	501	679

TABLE 8.05

1988 SCHOOL BUS CRASHES BY TIME OF DAY

Time of Day	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
Midnight - 2:59 AM	0	1	6	7
3:00 AM - 5:59 AM	0	1	2	3
6:00 AM - 8:59 AM	1	58	170	229
9:00 AM - 11:59 AM	0	22	65	87
Noon - 2:59 PM	0	29	72	101
3:00 PM - 5:59 PM	1	54	164	219
6:00 PM - 8:59 PM	1	4	7	12
9:00 PM - 11:59 PM	0	1	2	3
Unknown	0	5	13	18
Total	3	175	501	679

TABLE 8.06

1988 SCHOOL BUS CRASHES AND INJURIES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	31	118	149	0	56
February	1	25	66	92	1	42
March	0	17	37	54	0	29
April	0	10	29	39	0	24
May	1	22	30	53	1	39
June	0	8	14	22	0	60
July	0	1	7	8	0	2
August	0	2	2	4	0	2
September	0	14	30	44	0	31
October	0	13	35	48	0	26
November	0	10	71	81	0	11
December	1	22	62	85	1	37
Total	3	175	501	679	3	359

TABLE 8.07

CONTRIBUTING FACTORS IN 1988 SCHOOL BUS CRASHES

Contributing Factors	Attributed to School Bus Drivers Number **	Percent	Attributed to Drivers of Other Vehicles* Number **	Percent
Human Factors				
Driver Inattention/Distraction	97	(27.7)	128	(22.4)
Failure to Yield Right of Way	63	(18.0)	65	(11.4)
Illegal or Unsafe Speed	26	(7.5)	95	(16.6)
Vision Obscured	21	(6.0)	26	(4.5)
Improper Turn	20	(5.7)	11	(1.9)
Improper or Unsafe Lane Use	16	(4.6)	23	(4.0)
Following Too Closely	13	(3.7)	50	(8.7)
Driving Left of Roadway Center--Not Passing	12	(3.4)	9	(1.6)
Unsafe Backing	12	(3.4)	6	(1.1)
Driver Inexperience	6	(1.7)	18	(3.1)
Disregard for Traffic Control Device	5	(1.4)	25	(4.4)
Improper Passing/Overtaking	5	(1.4)	11	(1.9)
Improper Parking/Starting/ Stopping	4	(1.1)	11	(1.9)
Improper or No Signal	4	(1.1)	1	(0.2)
Physical Impairment	3	(0.9)	4	(0.7)
Other Human Factors	3	(0.9)	7	(1.2)
Vehicular Factors				
Skidding	15	(4.3)	39	(6.8)
Defective Equipment	4	(1.1)	5	(0.9)
Other Vehicular Factors	1	(0.3)	8	(1.4)
Miscellaneous Factors				
Weather Conditions	17	(4.9)	28	(4.9)
Road Defects	3	(0.9)	2	(0.4)
Total	350	(100)	572	(100)
No Improper Driving	325		200	
Total Number of Drivers	684		720	

* Includes pedestrians.

** One or two contributing factors may be attributed to a single driver.

TABLE 8.08

1988 SCHOOL BUS CRASHES AND INJURIES BY TRAFFIC CONTROL DEVICE

Traffic Control Device	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
None	2	81	247	330	2	195
Traffic Signal	0	35	80	115	0	45
Stop Sign--All Approaches	0	4	21	25	0	4
Other Stop Sign	1	42	104	147	1	84
Yield Sign	0	2	8	10	0	12
School Bus Stop Arm	0	3	10	13	0	3
Railroad Crossing Device	0	0	4	4	0	0
No Passing Zone	0	2	3	5	0	6
Other	0	5	5	10	0	6
Unknown	0	1	19	20	0	4
Total	3	175	501	679	3	359

MOTOR VEHICLE/TRAIN CRASHES

The year 1988 saw a return to normal in the number of motor vehicle/train accidents after the unusually low year of 1987. There were 168 crashes (nine of which were fatal crashes), 12 fatalities, and 70 injuries. Although the number of fatalities in 1988 is considerably higher than 1987, it is only slightly higher than the previous five year average.

The nature of motor vehicle/train accidents changed in 1988. The percentage of all crashes that involved only property damage increased 22% over 1987 and 18% over the previous five year average. The percentage of all crashes that were injury crashes, however, decreased 28% from 1987 and 23% from the previous five year average.

* People aged 10-29 accounted for 49% of the injuries and 67% of the fatalities. No one between the ages of 40-49 was involved in this type of accident in 1988. (Table 9.02)

* The month of January had the most crashes and injuries, but August and December had the highest number of fatalities. The lowest number of accidents occurred in April and June. (Table 9.03)

* Of the days of the week, Wednesday had the highest number of accidents, Thursday and Sunday the lowest. The afternoon hours of 3:00 to 6:00 PM had the most accidents, the morning hours of 6:00 to 9:00 AM the least. (Table 9.04)

* As in 1987, the contributing factor most often associated with motor vehicle drivers involved in the crashes was driver inattention, followed by failure to yield the right of way, then by disregard for traffic control device. (Table 9.05)

* A total of 77% of the motor vehicle/train accidents occurred at a Railroad Crossing device: 33% at a standard crossing sign, 23% at a railroad sign with flashing lights, 12% at a railroad crossing stop sign, and 9% at a railroad crossing gate. (Table 9.06)

TABLE 9.01

MOTOR VEHICLE/TRAIN CRASHES, 1983 - 1988

	1983	1984	1985	1986	1987	1988
Total Crashes	174	149	134	116	119	168
Fatal Crashes	11	7	8	5	4	9
Fatalities	15	11	13	12	4	12
Injury Crashes	69	56	63	53	55	56
Injuries	85	73	87	66	74	70
Property Damage Crashes	94	86	63	58	60	103

TABLE 9.02

AGE OF PERSONS KILLED AND INJURED IN 1988 MOTOR VEHICLE/TRAIN CRASHES

Age Group	Fatalities	Severe Injuries	Moderate Injuries	Minor Injuries	Total Injuries*
0 - 9	0	2	0	2	4
10 - 19	5	1	9	8	18
20 - 29	3	4	10	2	16
30 - 39	0	4	4	1	9
40 - 49	0	0	0	0	0
50 - 59	2	1	3	2	6
60 - 69	1	1	0	1	2
70 & Over	0	0	1	1	2
Not Stated	1	3	4	6	13
Total	12	16	31	23	70

* Total injuries does not include fatalities.

TABLE 9.03

1988 MOTOR VEHICLE/TRAIN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes	Fatalities	Injuries
January	0	10	18	28	0	14
February	1	5	12	18	1	5
March	1	3	6	10	1	4
April	0	1	6	7	0	2
May	1	2	6	9	1	4
June	0	3	4	7	0	5
July	2	6	6	14	2	8
August	2	2	6	10	3	2
September	0	3	6	9	0	4
October	1	8	9	18	1	8
November	0	8	15	23	0	9
December	1	5	9	15	3	5
Total	9	56	103	168	12	70

TABLE 9.04

1988 MOTOR VEHICLE/TRAIN CRASHES BY TIME AND DAY

	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight - 2:59 AM	15	7	0	4	1	0	0	3
3:00 - 5:59 AM	14	1	3	0	5	0	2	3
6:00 - 8:59 AM	10	1	2	1	1	1	3	1
9:00 - 11:59 AM	27	1	4	3	7	4	3	5
Noon - 2:59 PM	25	2	7	2	5	4	2	3
3:00 - 5:59 PM	36	4	7	7	9	6	1	2
6:00 - 8:59 PM	18	1	1	4	5	3	3	1
9:00 - 11:59 PM	20	2	5	3	1	1	5	3
Unknown	3	0	0	1	1	0	1	0
Total	168	19	29	25	35	19	20	21

TABLE 9.05

CONTRIBUTING FACTORS IN 1988 MOTOR VEHICLE/TRAIN CRASHES*

Contributing Factor	Number	Percent
Human Factors:		
Driver Inattention	59	(30.6)
Failure to Yield	43	(22.3)
Disregard for Traffic Control Device	30	(15.5)
Illegal or Unsafe Speed	12	(6.2)
Vision Obscured	9	(4.7)
Physical Impairment	6	(3.1)
Driver Inexperience	5	(2.6)
Improper Parking	3	(1.6)
Improper Lane Use	1	(0.5)
Other Human Factor	5	(2.6)
Vehicular Factors		
Skidding	7	(3.6)
Defective Equipment	2	(1.0)
Other Vehicular Factors	3	(1.6)
Miscellaneous Factors		
Weather Conditions	8	(4.1)
Total	193	(100)
No Improper Driving	16	
Number of Drivers	175	

* Factors are cited only for motor vehicle drivers, not for train operators.

TABLE 9.06

1988 MOTOR VEHICLE/TRAIN CRASHES BY TRAFFIC CONTROL DEVICE PRESENT

Traffic Control Device	Number	Percent
Standard Crossing Sign	56	(33.3)
RR Flashing Lights	38	(22.6)
RR Crossing Stop Sign	21	(12.5)
RR Crossing Gate	15	(8.9)
Stop Sign	8	(4.8)
Other	4	(2.4)
Unknown	3	(1.8)
None	23	(13.7)
Total	168	(100)

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